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Volume CXII MARCH 1948 *Number 852*



HUMAN
HEALTH
and
SUBSISTENCE

Establish the Orbit of Veterinary Medicine

and its use in human affairs is inseparable from the fact that the world has but 4 billion acres of arable land, and 2.25 billion people, each of whom need 2½ acres for personal subsistence. In planning to relieve under-nourishment, these global figures are inescapable.

As to our immediate situation, H. H. Finnell, soil conservation specialist *(Harper's Magazine)*, prophysies that "We are heading for the same set of conditions that gave us the Dust Bowl" and to this *(ibid.)* Secretary Anderson adds: "What we are doing to the Western Great Plains is nothing short of soil murder and financial suicide."

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Destruction of infected cows in the Foot-and-Mouth Disease slaughter program in Cedar County, Iowa, 1914. Right: Hoof of an infected cow.

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Report of Special Committee on National Board of Veterinary Examiners

[The following report is published now pursuant to the suggestion of the Committee on a National Board of Veterinary Examiners last year (see JOURNAL, *1947, pp. 443-444) and in order to give the entire membership ample time to study it before the 1948 annual meeting. Particular attention is invited to the report by delegates to the House of Representatives so that they may obtain the reactions of their respective associations and examining boards and be prepared to act on the report when it is presented at the annual meeting in San Francisco this year. See, also, the paper by Chairman Krill, "A Proposed National Board of Veterinary Examiners" in the* JOURNAL, *Nov., 1947, pp. 363-365.*—ED.]

It is proposed that a national board of veterinary examiners be sponsored by the American Veterinary Medical Association.

The purpose of this board shall be to establish a qualifying examination of such a character that the certificates awarded successful candidates may be acceptable to all state veterinary examining boards as ample evidence of professional qualification for the practice of veterinary medicine, subject to the licensing requirements of the laws of the various states. It is also hoped that such certificates may be acceptable to municipal, state, federal, and military services in lieu of the examinations now required for each of these services.

The examination would be divided into three parts:

Part I.—To be taken by undergraduates any time after completing two years of the professional curriculum and to cover the basic medical sciences.

Part II.—Taken by students after graduation from the professional courses and to cover all the subjects in the veterinary curriculum not covered in Part I. To be eligible for Part II, a student must have successfully completed Part I.

Part III.—This would consist of a clinical and practical examination to determine the student's adaptability to perform the functions expected of a veterinarian.

The details of the conduct of the examination and the cost of such examination are to be worked out by the board once it is duly organized.

It is believed that the functioning of such a board would exert a marked influence in gradually raising and standardizing the qualifications for the practice of veterinary medicine and thus serve to establish the profession more firmly and favorably in all communities and services in which veterinarians may be utilized.

MEMBERSHIP OF THE BOARD

The membership of this national board of veterinary examiners should have representation from many branches of the profession and in proper proportions. Our Committee, therefore, recommends the following:

Council on Education of the American Veterinary Medical Association	2 members
National Conference of State Veterinary Examing Boards	5 members
Veterinary college faculties	5 members
Research workers in animal disease in North America	1 member
Practitioners	6 members
Bureau of Animal Industry (chief)	1 member
United States Army Veterinary Corps (head)	1 member
Veterinary Division of the United States Public Health Service (chief)	1 member
National Assembly of Chief Livestock Sanitary Officials (state veterinarians)	1 member
American Veterinary Medical Association (president and executive secretary)	2 members
Elected by the National Board of Veterinary Examiners	5 members

Thus, it will be noted that the board is to be composed of five ex-officio members and 25 elective members.

The five members to be elected by the national board need not all be veterinarians.

Some non-veterinarians of professorial rank, teaching in veterinary colleges, may be selected.

Of the six practitioners to serve on the board, five are to be elected by the House of Representatives of the American Veterinary Medical Association and one elected by the American Animal Hospital Association. The election of other members of the board shall be made by the respective organized groups which they represent.

In the selection of members of the board, attention should be given to geographical distribution.

The tenure of office of elected members shall be for three years; a member shall not succeed himself more than once. The term of office of the first 25 members shall be determined at the first regular meeting of the Board. At this first meeting, a preliminary organization is to be established and a constitution and by-laws adopted, such as may be necessary to govern activities of the board and cover the term of office and duties of the officers. After having completed the organization and establishment of their program of operational procedures, the board shall proceed to file an application for charter under the laws of such state as may be recommended by counsel (medical and dental boards are chartered under laws of the State of Maryland).

Upon securing a charter, the national board shall perfect a permanent organization in accordance with the stipulation in the constitution and by-laws. It shall, thereafter, constitute itself a committee of the whole, to place the proposition of the National Board examination before all veterinary faculties, state veterinary examining boards, state and local veterinary organizations for their consideration; and shall also aid such organizations in their endeavors to secure the passage of such state laws or amendments to existing laws as will make possible the utilization of the services of the national board by the several states.

The requirements for admission and plans for examination shall be worked out by the national board after having collected for study all the requirements for admission to the several veterinary colleges in America and the state laws now in effect governing the examination of graduate veterinarians for a license to practice. It is highly advisable that all students be sufficiently well prepared upon their date of graduation to pass any reasonable examination that might be promulgated. Such examinations above all must be fair, not interspersed with catch questions, but planned to draw out the real scope and thoroughness of training and to determine ability to remember details. Successful candidates would receive a diploma certifying to their record as of the date of their final examination, which should be acceptable to the several state boards of veterinary examiners and agencies employing veterinarians. The holders of such certificates would be known as diplomates of the national board of veterinary examiners.

It is the feeling of the Committee that the actual details of operations should be left entirely to the national board of veterinary examiners after it is organized and should be sufficiently flexible to meet situations which may arise as the program expands.

Questions and Answers Relative to the Proposed National Board of Veterinary Examiners

1) Q.—What is meant by a national board of veterinary examiners?

   A.—The proposal calls for a board representing all organized branches of the veterinary profession to conduct comprehensive examinations in keeping with modern veterinary education, and to issue certificates to those who successfully pass such examinations. In the United States, medicine, dentistry and architecture have such boards. In the British Isles, the licensing of veterinarians by such a Board has been in operation since 1881.

2) Q.—Is this a new venture or has it been under consideration for some time?

   A.—At a special meeting of the California State Veterinary Medical Association in January, 1935, a special committee was appointed to study the possibilities of setting up a central board of veterinary examiners for the United States. The Committee prepared a report and was instructed to present the information obtained to the AVMA Executive Board for consideration. This was done and a special committee was appointed by the chairman of the Executive Board of the American Veterinary Medical Association to study this matter. This committee composed of Drs. L. M. Hurt, O. V. Brumley, and C. H. Hays, reported their findings and recommended the establishment of a central board of veterinary examiners at the 1936 meeting of the AVMA. However, there is no record of any official action ever having been taken on this report by the Executive Board.

   The present committee came into being as a result of discussions in the House of Representatives of the AVMA during the annual meeting held in St. Louis in 1943, relative to the licensing of veterinarians. The Committee has not acted in haste, but has studied the problem from all angles and is now proposing that such a board be sponsored by the Association.

3) Q.—What effect would a national board of veterinary examiners have upon a state licensing and examining board?

   A.—None whatever, except in so far as it may stimulate improvement in the type of examination now given in some states. It would be entirely optional with examining boards as to whether they wished to accept the national board examinations in lieu of their own. In many cases, it would require change in the practice acts in the various states. The state boards would still retain the right to determine who should be given a license, and, even though the law was changed to permit them to recognize the certificate of the national board as

evidence of professional efficiency, their powers to issue and revoke licenses would be unchanged.

4) Q.—Will it be mandatory for a state licensing board to give a license to a diplomate (holder of a certificate) of the national board of veterinary examiners?

A.—No. While the state board might recognize the certificate from the national board as evidence of professional efficiency, it would retain full power to accept or reject each applicant for a license.

5) Q.—Would a national board of veterinary examiners have any licensing powers?

A.—Absolutely not. This is merely a proficiency board designed to determine an applicant's qualifications in the field of veterinary medicine. The state and other agencies may or may not accept the findings of this board in lieu of special examinations of their own.

6) Q.—What effect would such a program have on reciprocity between states?

A.—If we are to judge from the experience in medicine, reciprocity between states would be greatly extended, but would not be mandatory.

7) Q.—What benefits are to be derived from such a board?

A.—Briefly they may be listed as follows:

1) Raise the standards of veterinary education by:
   a) stimulating scholarship in students;
   b) stimulating teachers in various fields to better prepare their students for such examinations;
   c) bringing more uniformity into the veterinary curriculums;
   d) having the results of these examinations serve as a yardstick for measuring the educational standards in the various schools.
2) Elevate the standards of veterinary examinations as now conducted in many states.
3) Stimulate more reciprocity between states.
4) Eliminate the necessity of special examinations for all the various veterinary services.

8) Q.—Who would be represented on such a board and how would their representatives be chosen?

A.—In setting up this proposed board, an attempt has been made to provide representation from all branches of the veterinary profession in proper proportion. Five are ex-officio members, and 25 are nominated by organizations representing the various segments of the profession.

9) Q.—Would the board be dominated by the American Veterinary Medical Association?

A.—No. The American Veterinary Medical Association is interested in such a board because this Association represents organized veterinary medicine and is continually trying to promote the best interests of, and higher standards for, the profession. Once the board is organized and chartered, it will operate independently.

10) Q.—What action will be necessary for the respective states to participate in this program?

A.—This will vary in the different states. Some licensing boards already have the power to accept the certificate of a national board if they so desire. In other cases, it may be necessary to change the practice act so that certificates of proficiency from a national board can be recognized in lieu of an examination by the state licensing board.

s/W. R. KRILL, *Chairman*.
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Advances in Physiology

The former orthodoxy that the scope of physiology was limited to normal functions, and that of pathology to abnormalities of structure and function, could not stand up in the face of the scientific advancement of both sciences. They blend inseparably into each other. No scientist of this day tries to draw a sharp line between them but instead strives to qualify as well as possible in both fields. When reproduction, for example, is interrupted for the while from a broken endocrine chain, who will step in and say whether a physiologist or a clinician should be called in. Is the defensive mechanism of the body physiologic or pathologic? It is necessary to name but a few of these topics which bring to the clinician a realization that physiology is not a branch of study to be abandoned at the door of the college, while he goes forth to lose himself in the wilderness of pathology.

The Case of Mineral Oil.—Except to reduce friction, mineral oil is tabooed. Its rightful place is the crankcase and oil can, not in the medicine chest. Besides stopping the conversion of carotene, some of its particles surmount the intestinal barrier and lodge in the tissues, authorities in the higher *cadre* emphasize in the medical press.

At the level of the renal tubules, where the constituents of urine are separated from the circulating plasma, lies the most inexplicable mechanism of the mammalian body.

Nuisance Suits Against Veterinarians

ROBERT E. ACKERBERG, LL.B.
Chicago, Illinois

THE POSSIBILITY of being sued is one of the risks of driving an automobile, proposing to spinsters, or of practicing veterinary medicine and surgery, or dentistry. It is a risk that can be minimized. On the basis of there being few recorded cases of "nuisance" suits brought against veterinarians, the profession is to be commended for its good sense and consideration for others, which are basically the best insurance against the risk of being sued.

On Nov. 12, 1947, the New York Supreme Court (appellate division, third judicial department) handed down a decision in which the court vacated an earlier decision finding a veterinarian in contempt of an order forbidding unreasonable barking of dogs in kennels and harboring of dogs in a small animal hospital. This case is a fresh warning of the need for careful preparation against the risk of being sued for maintaining a nuisance, a kind of preparation observed by conscientious veterinarians as an incident of their regular work. By observing high standards in their practice, they have also built the means of avoiding, or of winning, law suits. They have done this principally by the astute selection of locations, and by careful and considerate operation of their facilities. Before discussing these successful tactics in detail, I suggest that we first consider the nature of nuisance suits.

This article is an analysis of the obligations and privileges pertaining to the operation of a veterinary hospital. It was prepared for a special committee of the AVMA, which had been appointed by President Hagan in response to requests for information of this nature from several states during recent months.

Mr. Ackerberg, a member of the Illinois bar, has reviewed the law of nuisance, and has set forth those items which are accorded legal significance. He has also studied the interpretation of the law as it applies to specific factors of a controversial nature and as it has been applied by judges in many states.

A careful study of the article will be helpful to every veterinarian, but especially to those who hospitalize dogs.

Special Committee on Legal Aspects of the Operation of Animal Hospitals
WAYNE H. RISER, *chairman*; R. C. KLUSSENDORF, RALPH E. RUGGLES.

THE LAW OF NUISANCE

There is a considerable literature on the law of nuisance which has been developed from the early days of English law. According to Blackstone, "a nuisance is anything that unlawfully worketh hurt, inconvenience, or damage." This covers a lot of ground. In the development of the law, various kinds of nuisances were detected, labeled, and described by such phrases as public nuisance, private nuisance, nuisance *per se*, mixed nuisance, nuisance in fact, etc. In the last century, suits to enjoin or to abate nuisances were often brought when industrial and commercial enterprises encroached upon purely residential areas, a phenomenon which led to the development of systematic planning of communities, and to zoning restrictions.

In dealing with large numbers of nuisance suits, the courts applied a few established principles of law to an infinite variety of factual situations. The justification for granting relief rests on the premise that everybody is generally entitled to the reasonable enjoyment of his property; on the other hand, he must so use his property so as not to interfere unreasonably with his neighbor's enjoyment of adjoining property. Liability for maintenance of a nuisance extends to everything endangering life or health, offending the senses, violating the laws of decency, or obstructing the reasonable use of property. Whether a nuisance exists must be determined from all the attending circumstances, including the reasonableness of use, the locality, the extent of injury, the nature and effect of the matters complained of, priority of occupation, the existence of similar annoyances in the neighborhood, etc. On the one hand, a lawful business may become a nuisance; on the other hand, certain discomforts incidental to existence in an industrial community and essential to its progress and existence must be endured.

In discussions of the law on nuisances, there is a wide area covered by a few flexible phrases, such as "reasonable use of property" and "unreasonable discomfort

to neighbors." A suggestive favorite of courts and lawyers has been "all the attending circumstances." Still another is "sensibilities of ordinary and reasonable persons." So general is much of the statement of law that it can become mere verbal exercise, a dull sport in which seasoned lawyers seldom engage.

EXAMPLES OF APPLICATION

An understanding of general principles may come painlessly by noting a few examples of their application. A Pennsylvania court in 1945 held that a nuisance was created by keeping a single yelping dog in an enclosed yard with the result that unreasonable physical discomfort was caused the neighbors. In 1943, a Kentucky court had reached the same conclusion in a case involving 3 dogs whose habits included loud barking in the night and early morning. In 1944, an Ohio court held that the keeping and raising of dogs did cause the neighbors discomfort and did constitute a nuisance under the circumstances of that case. On the other hand, under different circumstances, a Michigan court in 1939 held that it was proper to raise dogs, the kennels being cleaned daily, where the location was not within a congested city. In 1942, an Ohio court defended the feeding of hogs on a 4-acre plot, with the admonition that the manner of feeding must remain reasonable. In 1943, a New York court upheld the maintenance of a long established duck farm against the wrath of a new owner of adjoining riparian rights, even though the air was not free from quacks and odors and though the stream was sometimes fertilized. A Georgia court refused to enjoin the use of church facilities in 1941 by Holy Rollers in a residential area. Use of a radio was held not to be a nuisance in Texas in 1931, nor was a stable in a residential area in Pennsylvania in 1926. In the same year, however, a barbecue stand in Missouri and a "hot dog" stand in New York, both in residential areas, were enjoined as nuisances. A funeral parlor in a residential neighborhood was enjoined in Alabama in 1930, and dog kennels in Colorado were enjoined in 1932, because they led to continuous annoyance and discomfort of neighbors on adjoining property. In some cases, the erection or maintenance of hospitals and funeral parlors have been enjoined; in other cases, the operation of oil refineries and slaughter houses have been protected. This arbitrary list of scattered results in various cases would bewilder the reader who looks for simple standards and clear assurances, things which do not exist in poker games or in summaries of the law, except in misleading forms. The differences in factual situations, to which the law is applied, would explain apparently inconsistent results in many cases.

STEPS IN MINIMIZING LITIGATORY RISKS

So much for the law on nuisances. The selection of a location is the first step in the establishment of a veterinary practice, and it is also the first step in minimizing the risk of litigation. In general, purely residential areas are inappropriate, although quite different meanings may be attached to the word residential. With qualifying words, there is a real difference between high-class residential and semi-residential. Certain residential locations would be improper, apart from the factor of nuisance liability, because of zoning restrictions or because of restrictive covenants in the chain of title which limit permissible uses of the premises. These items should be detected easily in the title search, provided that your attorney or title company is explicitly notified of your interest in such restrictions; in other words, in buying property for use in your practice, do not permit your attorney or title company to assume that you are solely interested in a residence. You are a veterinarian as well as a newly-wed, or a grandfather. Tell them what you want the property for; have them tell you expressly that there are no zoning restrictions and no restrictive covenants against your using the property in your practice. Such restrictions are most common in residential areas, but there may be some in commercial areas, and you should have your title guarantees in whatever kind of area it is in which you buy or lease real estate.

Apart from worrying about good title to your property, you should consider annoyance potentialties among your neighbors, some of whom could become plaintiffs, with lawyers. As people sleep in residential areas, they are apt to resent nocturnal noises; if awakened at night more than once, they are apt to try to do something about

it. On the other hand, if they live near a boiler factory, they would probably be immune to new, minor noises. In rural areas, with dogs all around, the neighbors would probably find their relative tranquillity undisturbed by veterinary facilities. In small communities and in crowded cities, where people living in or near commercial and industrial neighborhoods develop a certain tolerance for noise, they would be less disturbed than those living in high class residential areas. Please allow for exceptions to all general rules.

Having checked your title against your specific needs, and having even earlier selected your neighborhood, you may take further steps to insure your welcome. Before you commit yourself or "close the deal" on the location, it would be well to visit all prospective neighbors who could conceivably be annoyed by your practice, in order to advise them of your plans and to solicit assurances of approval. In fairness, you should fully describe what your practice would entail, and in so doing you may be able to detect storm warnings. It is not suggested that you invent or stir up trouble, of course, nor is it true that you should jettison your plans because of the opposition of one or more prospective neighbors. The purpose of the visits, in addition to neighborliness, would be to communicate accurate information, to test your reception, to secure approval if possible, and it is a good idea at this point to think in terms of evidence, that is, that you have more proof than your own word of the approval of a doubtful neighbor. See him in company with others; it may even be possible to have such approval reduced to written form, except that one may overdo precautions and arouse suspicion. Your good sense is the best guide in dealing with people.

Let us assume now that you have obtained the approval of your prospective neighbors. This would be a strong factor in your favor if one of them should later decide that the whole project is obnoxious in principle, particularly if he has stood by after granting his approval and watched you invest substantial sums in constructing facilities needed in your practice.

Before you do plunge into the construction of your facilities, there is another step, suggested in a case decided by the Supreme Court of Wisconsin in 1923, in a suit to enjoin the construction of a veterinary hospital in a small city on the boundary between business and residential areas. The veterinarian had had his plans for the hospital approved beforehand by the State Industrial Commission, the State Board of Health, and by the city health officer of Antigo. This diligence and care to take every possible precaution to render facilities sanitary and inoffensive to neighbors were commended by the court, and were a potent factor in procuring victory for the defendant. In 1942, a Pennsylvania court in a different sort of nuisance suit held that an official permit for doing the business complained of was a defense to the complaint.

These cases suggest two lines of approach to plans for facilities. Be as thorough and as conscientious as you can in obtaining professional approval and in meeting high standards; also, get official approval of your plans from as many governmental agencies and persons as you can. This course will lead to excellent facilities, and it will look good in court. Common sense pays off both ways.

Obligation to Operate Facilities Reasonably

At this point, you are happily established in a suitable location, with the approval of your neighbors, and proudly operating excellent facilities. Let us concede that you are in the clear, so far. Now, you still are under an obligation to maintain your practice in a reasonable manner. The Wisconsin court which held that a veterinary hospital would not be a nuisance *per se* went on to state that the hospital could be so operated as to become a nuisance. This is fair enough, as veterinarians can best appreciate. The same principle was applied to night clubs by a Florida court in 1947; the court held that a night club was not a nuisance *per se* and was not required to live up to a higher standard of morality than that of the community in which it operated, but that it could be abated as a nuisance if it should fall below the Florida standard.

Having launched into your practice with all the initial precautions taken and approvals secured, there is a continuing obligation to prevent unreasonable noises and odors which could cause unreasonable annoyance to some neighbor of ordinary

sensibilities. For example, it appears unreasonable to leave small animals unattended overnight; if a crew of dogs in a strange place should commence barking at night, they could make considerable noise before normal business hours of the next morning. In a crowded neighborhood, such a state of affairs could not long continue before some citizen took steps to prevent the noise. He might see a lawyer. If you got tough rather than conciliatory, you might get bad news from a judge. The odds are heavily against such misfortune, however, as the recorded cases show that veterinarians have too much good sense to get into such predicaments except in leap years, on every fifty-third Wednesday, approximately. They have observed high standards; their patients have not been neglected; their premises and facilities have been frequently cleaned and any odors minimized by use of effective disinfectants. There have been few complaints, and less cause for complaint.

DEFENSE ARGUMENTS IN CASE OF COMPLAINT

The old maxim of a little knowledge being a dangerous thing has had abundant support in general experience, and perhaps even more in law suits. In nuisance cases, the courts give consideration to many factors, which are defined in the factual circumstances of each particular case. Defendants have often relied on the argument of prior occupancy, on the fact that they had been established in their location and in their allegedly obnoxious ways before the plaintiffs "came to" the nuisance, and the argument is always relevant; however, it is not decisive, and it may be outweighed by other factors. In cases of veterinary facilities, the argument is always a strong one and should be more compelling than in other types of nuisance cases. The argument of prior occupancy may be countered by the claim that there has been recent aggravation of the condition complained about. Of course, all claims and arguments are to be supported or refuted by proof. The veterinarians' best proof against the claim of aggravation is their adherence to high standards of care and sanitation.

Another argument of defendants is that they have committed substantial investments in properties alleged to constitute a nuisance. This factor is relevant, but is not very persuasive in itself. The Illinois Supreme Court considered the cost of amusement devices immaterial when it enjoined the operation of an amusement park in 1929 upon suit brought by adjoining property owners. It also rejected the defense that the neighborhood was not closely built up; a valid complaint may be brought by a single plaintiff, whose case is strong. The factor of defendant's investment is in effect multiplied by the added item that the plaintiff stood by with knowledge and permitted the defendant to commit himself. The result is called estoppel; in a somewhat different form, it may be termed prescription, meaning that the defendant has created a privilege in himself by assuming to act over a long period of time openly and adversely to the rights later asserted by the plaintiff. The defense of prescription is not likely to be involved in suits to enjoin veterinary functions.

The defense of estoppel is an important one. It rests solidly on common ideas of fairness and common sense. A man should not be permitted by injunctive relief to destroy his neighbor's investment which he had previously approved. The element of approval is conditioned upon knowledge, a condition which was not met in an Illinois case in 1902. Over five months after a private home had been converted into a hospital, a neighbor sued to enjoin its operation. The defendant proved that the neighbor had received notice of his plans before he plunged into alterations, but he failed to show that the neighbor was so familiar with hospital operations as to know what discomfort and inconvenience would result. Therefore, an injunction issued. The moral here is that a sketchy or inadequate notice to prospective neighbors may not be enough to support the estoppel defense. In seeking the approval of neighbors, a general description of your prospective practice should be given, of what you plan to do, of the facilities you mean to use, and of your methods of operation. Such a description can be brief and adequate, but it should dispel any previous notion that veterinarians are a new kind of interior decorator or a school of philosophy.

Another ground of defense is that the plaintiff or other neighbors cause identical

or similar annoyances; its value is determined by particular circumstances. It is vulnerable to the counter attack that one's wrong is not justified by another's. Still another defense is that plaintiffs are unreasonably sensitive, that what annoys them would not annoy normal folks.

Your most impressive defenses, if you should be drawn into litigation, will be your record, and your premises. The judge, or his referee or master, should "take a view" of your property, your equipment, and facilities; accompanied by lawyers of both sides, he will closely inspect all things and places involved in the testimony of witnesses. The witnesses, including yourself and the plaintiff, will recreate your record as a practitioner, to some extent, on the transcribed record of their testimony. Witnesses for the defense will include friendly neighbors and clients, your associates and acquaintances in the profession who have knowledge of your operations, doctors, officials, salesmen, and other visiting firemen who know something about your premises and your methods. The witnesses will be impressive partly because of their eminence as individuals or as experts, and even more by the degree of their familiarity with you and with your measuring up to high standards of care, diligence, and sanitation.

There are some colorful and "flag-waving" arguments which should not be neglected in the defense of a veterinarian. His practice is important to the public welfare. It is essential to farmers and to the dairy, packing, food, and clothing industries, to the good health of household pets, to the feeding and happiness of the public generally. With a few minutes of reflection, your lawyer should be able to develop these points with moving eloquence and at considerable length. A single flow of arguments may commence with the cow, proceed to the milk and carry on to the importance of milk to romping children and babes in arms. Another could commence with the plight of a stoic, injured pup, his fortitude, his place in the hearts of his owners, their need for his devotion and lively affection, the importance of that wagging tail and generous tongue to the owners' peace of mind in this turbulent and ruthless world. Such eloquence could be overdone, but it would be partially justified by the tempting subject matter.

A more sober note in the arguments on the importance of the profession may be introduced by reference to your state laws. As in Illinois, they probably contain a definition of the practice of veterinary medicine and surgery or dentistry and require a license for its practice. A separate state department or agency may have cognizance of certain restrictions on use of drugs, reporting of diseases, investigations of unauthorized practice. Yet another provision may exempt veterinarians from jury service, this being a basis for argument of the signal importance of the practice to the welfare of the state. A separate college for instruction in veterinary arts and sciences may exist in your state, and this should be emphasized. In fact, the requirements for admission to practice should be specified and itemized as an impressive basis for contending that the practice constitutes a profession as exalted as that of law, medicine, teaching, and, therefore, to be differentiated from cases involving mere trade, traffic and commerce where it would be expected that injunctions should issue more easily.

VETERINARY ASSOCIATIONS AND LITIGATION INVOLVING PRACTITIONERS

Your national and state veterinary societies are deeply concerned about litigation to enjoin the practice of any veterinarian. Any adverse decision could constitute a precedent with dangerous implications to the profession. It is suggested that you notify your societies as soon as you receive notice of a suit against you. An adequate form of notification would be by letter from you or, preferably, from your attorney. The formal interest of the societies could be as *amici curiae*, or friends of the court for purposes of furnishing advice and information to the court, the justification being to protect the best interests of the profession and of the community. It is quite possible that the societies could provide information of value to your attorney in any event.

LEGAL COUNSEL

At the first indication of serious complaint from a neighbor or other potential litigant about your operations being obnoxious, you should call in your attorney. His advent in the situation in itself may be sufficient to result in informal arrangements satisfactory to all concerned. Some of the

ablest lawyers mark their success by the degree to which they keep their clients out of court, not "to beat the rap," but because litigation should be a last resort in the settlement of grievances. Litigation for its own sake is a weary, uncertain sport. When it does become important, when it is the only course open, then the earlier your attorney is in the case the better for his ability to clear the decks for action. There is no substitute for careful preparation for trial, and adequate time is an ingredient of proper preparation. The work involves thorough investigation of all relevant facts, interviews with witnesses, considerable legal research, drafting of pleadings, the lunges and ripostes of procedural maneuvers, and finally the drums and alarums of trial.

It may be necessary to submit briefs to the court. Thereafter, the case may involve the arduous course of an appeal to a higher court; in the flutter of documents, and the clatter of learned argument, time is a minor consideration. In a bitterly contested case, your attorney will certainly earn his keep; he will do better than that if he wins, and best of all if he achieves satisfactory results without litigation.

It is hoped that the nature of nuisance problems has been adequately described for veterinarians' purposes. In general, the risk of being sued is very slight where professional standards of operation have been observed, where caution and good sense were employed in the selection of a location, and where the practitioner has exerted reasonable efforts to be diplomatic and considerate of his neighbors. Where suit is brought notwithstanding all these efforts, the odds favor the veterinarian heavily, especially when he has summoned his attorney in time.

Procaine Penicillin G

In preliminary studies at the Mayo Clinic, one intramuscular injection of a procaine salt of penicillin G (duracillin) afforded adequate blood concentrations of penicillin for twenty-four hours or longer. A sesame oil suspension of the procaine penicillin was used (300,000 units in 1 cc.), apparently with "entire safety and without evidence of any serious toxic effects." Absence of local irritation after injection suggested that the procaine had an anesthetic effect in addition to prolonging the action of penicillin.—*Herrell et al., Proc. Staff Meet. Mayo Clin., 22, Dec. 10, 1947.*

Animal Medicine Vital to Our Economic System

To develop the theme "Animal Medicine a Vital Part of Our Economic System," *Science Illustrated* (January) ran a six-page illustrated article on some of the daily activities of the School of Veterinary Medicine, University of Pennsylvania. Shown are (1) a heifer receiving x-ray treatment for "lumpy jaw"; (2) a cow in stock for study of rumen motility; (3) an Afghan Hound receiving an intravenous injection; (4) a Spaniel receiving oxygen treatment for pneumonia; (5) x-ray examination of a dog's hind legs; (6) dressing a horse's leg, (7) filing a horse's teeth by a woman student; and (8) a classical intra-abdominal operation on a cat.

The school is complimented for having Brig. Gen. R. A. Kelser (retired) as its dean. His important work is well known in the field of scientific research. The number of veterinarians in the U. S. A. is given as 14,500 and the value of the 185 million head of livestock under their care at $11 billion or nearly twice as much as the total value of the steel industry. The AVMA is praised for its research fund and veterinary research workers are commended for work on rabies vaccine, vitamins, and periodic ophthalmia. Mention is made of the increase in the number of veterinary colleges and the growing veterinary profession, the extension of veterinary medicine into the country's $230 million a year fish industry, besides the care of the nation's pet industry whose value cannot be estimated.

The Ecological Factor.—Wisely, W.W.A. points out in the *Texas Veterinary Bulletin* (May, 1947) that opinions of the most famous authors must be "taken with a grain of salt" when local observations are dished out for general consumption, for, what may be true of one locality may be false in general. He singles out Udall (New York), Brumley (Ohio), and Hamilton Kirk (England), as guilty of setting down facts for general consumption that do not apply at all to Texas, for example. The criticism is all too sound and is not muffed by editors who find numerous occasions to set authors right in this respect.

Congressman Gillie's Report on Foot-and-Mouth Disease

THE coöperative United States-Mexican campaign to eradicate foot-and-mouth disease by the slaughter method failed for five interdependent reasons: (1) failure to realize complexity of the undertaking; (2) difficult terrain and lack of roads in central Mexico; (3) poor public relations; (4) lack of support from Mexican farmers; and (5) politics.

1) When the program was inaugurated, Mexican and American officials estimated it would be necessary to slaughter about 1½ or 2 million cattle to eradicate the disease. By the end of November, 1947, it was obvious that every cloven-hoofed animal in the infected area would have to be killed—in other words, about 5 or 6 million cattle and perhaps that many sheep, goats, and hogs. The Mexican government decided it would be impossible, economically and politically, to do that.

2) There are practically no paved highways or roads of any kinds in central Mexico—a drawback sufficient in itself to defeat the campaign. It was difficult and at times impossible to transport heavy digging and disinfecting equipment to zones of operation. Moreover, the Mexican army was unable to enforce quarantine regulations because, for every Mexican who used roads (which soldiers patrolled) to go from place to place, there were 50 or 100 who used winding paths and trails, or who cut across fields to get to their destination. Trying to control that kind of traffic was hopeless.

3) Public relations were badly neglected. Not enough effort was made by the officials conducting the campaign to indoctrinate farmers through means of communication that they could understand: by word-of-mouth education, by working through the village mayor, political boss, or parish priest. On a tour of the zone of operations, a U. S. Congressional committee saw animals being killed with .22 caliber pistols in some instances. Often, all of the people in the community would stand by and watch animals writhing in pain in the burial pits as campaign personnel shot time and again to try to kill the animals with these puny weapons. The Mexican people love their work animals, and it was only natural that they would spread word of the slaughter horrors to communities next scheduled for eradication measures.

4) Basically, lack of coöperation on the part of Mexican farmers themselves was the big reason for failure. With their full support, all other difficulties might have been overcome; without it, the job could never have been completed. Sometimes they hid their animals in the woods, at times they drove them over the mountains and left them with relatives in uninfected valleys, sometimes they neglected to report an outbreak, while in other instances they f o u g h t eradication efforts openly and bitterly.

5) They have politics in Mexico, just as we have in the United States. And, just as in the United States, parties out of power make political capital out of the problems faced by the party in control. American politicians are using issues relating to high prices and rationing to embarrass their opponents. In the same vein, Mexican politicians used a "whisper campaign" ridiculing the slaughter program to discredit the administration. "You have had foot-and-mouth disease here for years. This is not a new disease in Mexico. This whole campaign is just a trick on the part of the administration and their Yankee friends to destroy the agricultural economy of Mexico," was how the whisper went.

Results of Congressional Hearing

All of these reasons for failure were aired at public and private hearings before the House of Representatives agriculture committee over a period of ten days following the USDA announcement on Nov. 26, 1947 (*see* JOURNAL, Jan., 1948: 8-9), of drastic changes in eradication plans. Private questioning of key witnesses who testified at public hearings was deemed advisable because "there were some matters involved here which could not be discussed fully in public—and we wanted to get the whole story for our guidance before we took any action." In no case did the facts or opinions expressed by the witnesses in private conferences vary in any material detail from the testimony they had given publicly.*

After sifting the evidence presented, the House committee unanimously adopted recommendations outlining the policy it felt should be adopted, and transmitted this information to the Department of Agriculture and to the State Department. In turn, the recommendations were made the basis

Abridgment of an address delivered by Congressman (Dr.) George W. Gillie, of Indiana, at the forty-eighth annual veterinary conference, University of Pennsylvania, Philadelphia, Jan. 6-7, 1948. The complete address appeared in the *Congressional Record*, 80th Congress, second session.

*Transcripts of the public testimony may be obtained by writing to the clerk of the House Committee on Agriculture.

of the new program now in effect. Although it is felt that both governments must adhere closely to all the principles set down by the House committee, it is believed that undeviating attention must be given to enforcement of the first two provisions, quoted below:

1) The campaign against foot-and-mouth disease in Mexico shall be conducted on the following basis: first, an all-out effort by both countries to hold a quarantine line immediately north of the present infected area, including a sterile zone as wide as possible south of such line in which all infected and exposed animals will be subject to immediate slaughter and burial, in order to prevent the spread of the disease into northern Mexico and the United States; second, extension and enlargement southward of that sterile zone as rapidly as circumstances will permit, with vaccination being employed by the Commission only as an adjunct to quarantine.

2) It shall be understood definitely by all participants that the program now undertaken is not an abandonment of the effort to eradicate foot-and-mouth disease from this continent but is merely a postponement of that effort until it can be undertaken and accomplished in a manner which is more acceptable to the Mexican people and tolerable to the Mexican economy.

THE OUTLOOK FOR FUTURE OPERATIONS

Where bad terrain and lack of roads worked against the original eradication program, it is believed that these factors will actually favor the revised program. The main quarantine line—designed to prevent the spread of infection from central Mexico into northern Mexico and the United States—runs from the vicinity of Tampico on the Gulf coast almost straight west to a point north and west of Guadalajara and then it angles southwest to the Pacific coast. There are only three or four highways and railroad routes across this quarantine line. All north-south traffic going any appreciable distance follows these main transportation arteries, thereby making it relatively easy for army patrols to maintain an effective quarantine. Moreover, the quarantine line has been laid out to take advantage of natural barriers, such as rivers and mountain ranges. While many paths and trails run across the ranges, just as they traverse the interior of the infection area, the traffic on these trails is not through traffic, but rather of the neighbor-to-neighbor, village-to-village type. Therefore, it seems improbable that the disease will be transported many miles even if it goes on uninterrupted.

Another point in favor of the new program is that ranchers in the rich cattle-raising country of northern Mexico are 100 per cent behind the eradication plan. They have been the most active of any of the Mexican people in working to make the program a success, obviously because the disease would be ruinous to them. It is certain that they will not only give quarantine troops full backing, but also probably will use their own armed guards (which most of them maintain) to enforce the quarantine.

Hand in hand with this disease-control strategy will go a better public relations program modeled to profit by earlier mistakes. Farmers will be sold solidly on the eradication program before it is undertaken, there will be plenty of machinery to do the work, mules will be delivered to farmers the day their oxen are slaughtered, and food will be distributed to replace livestock products not available while eradication measures are being carried out.

The consensus is that the new campaign will bring eventual victory over the disease, perhaps in several years, perhaps in a generation. Nevertheless, the possibility cannot be ignored that the infection may never be driven off the North American continent.

Foot-And-Mouth Disease Research

A foot-and-mouth disease research advisory committee consisting of Drs. W. A. Hagan, R. A. Kelser, R. E. Shope, and J. Traum has been appointed by Dr. B. T. Simms, chief, Bureau of Animal Industry and has recommended that a long-time research program be started by the United States and that it be conducted under the jurisdiction of the United States on United States territory. A suitable location is being sought.

The immediate program, until our own facilities are ready, consists of work in both Europe and Mexico. Qualified research men are being sent to laboratories engaged in foot-and-mouth disease research in England, Holland, Denmark, Switzerland, and possibly other countries. In this experimental work, cattle, swine, and guinea pigs will be used, and the appropriate share of expenses incurred will be paid by the United States Department of Agriculture.

A long range research program is also being planned. It will be concerned with fundamental research on the virus itself

and on the modes of transmission, in an attempt to develop better diagnostic methods, and in preparing more effective and less expensive vaccines.

Foot-and-Mouth Disease Vaccination

The following excerpt from the *Veterinary Record* of December 6 (1947), in the section "Questions in Parliament" and under the headline "Foot-and-Mouth Disease Immunization," belongs in our debate over methods of control:

> Mr. Percy Wells asked the Minister of Agriculture whether he is satisfied that the Department is fully informed on the experiments in the immunization of cattle against foot-and-mouth disease, carried out in the Argentine; and whether he is prepared to give immediate consideration to the immunization of British stock generally.
>
> MR. T. WILLIAMS.—My department is fully aware of the nature of the immunization experiments against foot-and-mouth disease that have been carried out in the Argentine. There are, however, essential differences between conditions in Argentina and here, and I am not prepared to give my support to a practice which, I am advised, could not give complete protection but might tend to mask the disease and thus to render the eradication policy less effective.
>
> MR. TURTON.—Is the Minister aware that the Argentine Rosenbusch vaccine gives only partial protection, but the Waldmann vaccine provides complete immunity?
>
> MR. WILLIAMS.—My veterinary advisers advise me to the contrary. In any case, two of my veterinary surgeons are in the Argentine now.

Intermountain Association Recommends Fence on Mexican Border

The Intermountain Veterinary Medical Association, in convention at Salt Lake City, Utah, Jan. 12-14, 1948, expressed serious doubt that it will be possible to get the Mexican government to follow all of the recommendations made by United States officials regarding foot-and-mouth disease. For this reason, that association decided that the problem must be faced without any illusions—that it is imperative we start to work on our side of the border to prevent introduction of the virus. To that end, the following resolution was passed:

RESOLUTION ON FOOT-AND-MOUTH DISEASE

I.

WHEREAS, foot-and-mouth disease has attained serious proportions in Mexico and now exists within 300 miles of the Texas border and

WHEREAS, the eradication program by the slaughter method has been abandoned in favor of a vaccination program which has never been successful,

WHEREAS, an effective quarantine in Mexico has been demonstrated to be unenforceable, and

WHEREAS, the circumstances enumerated constitute an immediate and grave danger to the livestock industry of the United States.

THEREFORE, BE IT RESOLVED, That the Intermountain Veterinary Medical Association hereby goes on record as urging that the American Veterinary Medical Association take immediate action, looking forward to the enactment by Congress of legislation to appropriate funds immediately for the building and maintenance of a fence along the entire Mexican-U. S. border and to have same adequately patrolled.

BE IT FURTHER RESOLVED, That copies of this Resolution be transmitted to the president and secretary of the American Veterinary Medical Association, to the Secretary of Agriculture and members of the Agricultural Committee of the Senate and House and to the Senators and Congressmen of Montana, Idaho, Utah, Nevada, Wyoming, Colorado, and to the state veterinarians of these states for distribution to the press.

The Medical Robot

Medicine is undergoing a curious evolution. The trend is toward replacing the clinical examination and observation with instrumentations. One apparatus diagnoses disease without any other examination and another detects cancer and cures it. Shades of Abrams and Boyd, who diagnosed lesions mechanically through the intermediary of the living body. Soon it will not be necessary to examine a patient at all; contact with an apparatus is all that will be required to detect disease and its reason for being there. What's the use to study medicine because it now completely neglects the indispensable thing—the human being. The law of minimum effort, the doctrine of facility, the penchant for analysis rules the medical vocation. The examination, the observation, the understanding of mental states, cannot be accomplished by the most perfect machine. Clinical diagnosis and therapeutics is an affair of judgment.—*L'Homeopathie Francaise, October,* 1947.

A hen must produce from 110 to 130 eggs a year to pay for her feed and upkeep.—*From the Egg Basket.*

Equine Infectious Anemia in Germany

Lieutenant Colonel FRANK A. TODD, V.C., U. S. Army

Berlin, Germany

DURING and following the years of World War I, equine infectious anemia spread into many countries. In Germany, prior to that time, only isolated cases were reported and these were confined to the areas adjoining France, but during that war, considerable trouble was experienced from this disease, and German authorities attributed the cause of its spread in Germany to the uncontrolled redistribution of military horses. England prevented the introduction of equine infectious anemia by prohibiting the entrance of horses from the war theaters. The number of cases reported in Germany since World War I has fluctuated. Laws and regulations in Prussia pertaining to the control of equine infectious anemia produced a case-finding program that revealed this disease to be widely spread in that state. However, as laws were enacted in other states and lands, particularly those providing financial remuneration, the number of cases reported increased. The reluctance of farmers to report infected animals in compliance with the control laws, together with the difficulty of establishing a positive diagnosis for it, has not provided an accurate picture of the incidence in Germany. It has been observed that the largest number of cases reported are from areas where the official veterinarian is experienced in the diagnosis. Although equine infectious anemia is a reportable disease in Germany, the present statistics available are not an accurate picture of its incidence.

In 1929, it was reported that the German army had eliminated infectious anemia from their horse population, but during rearmament in 1936 the disease again was introduced by newly acquired animals.[1]

CAUSE

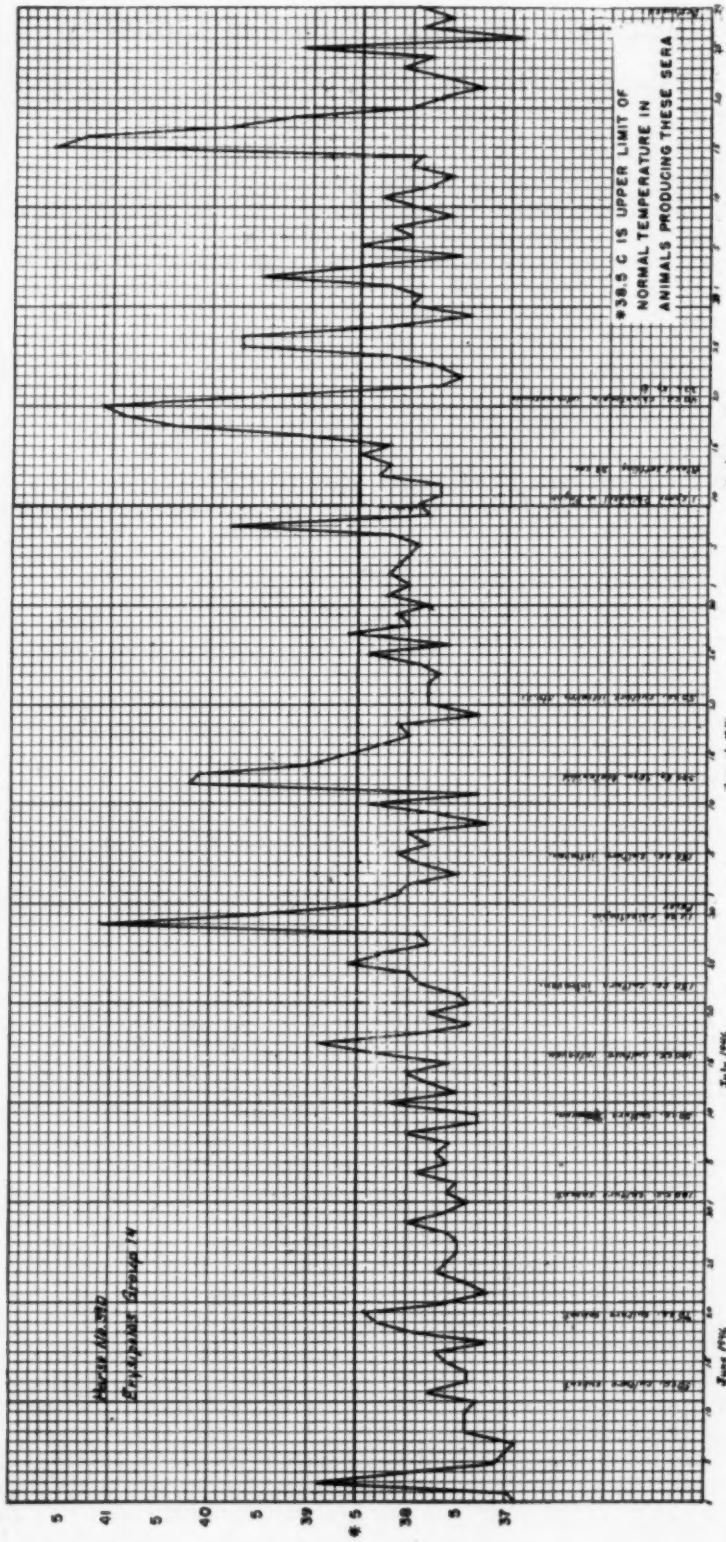
Equine infectious anemia is caused by a filterable virus (Carré and Vallée, 1904). Experiments indicate that the disease is transmissible only to the equine species. However, 3 cases in human beings have been reported (Luhrs 1917, Peters 1924, Verge 1933) and have been confirmed by the transmission test to a horse.[2] The causative organism can be found in all organs and liquids of the body, including the excrements. The disease can be passed to the fetus. Boiling destroys the virus. According to Frohner and Bierbaum,[3] and Fortner,[1] a 0.5 per cent solution of phenol at 14 to 15 C. kills the virus in serum after three months. The virus can be preserved for several months in dried blood at room temperature as well as in putrified urine and scattered manure.

TRANSMISSION

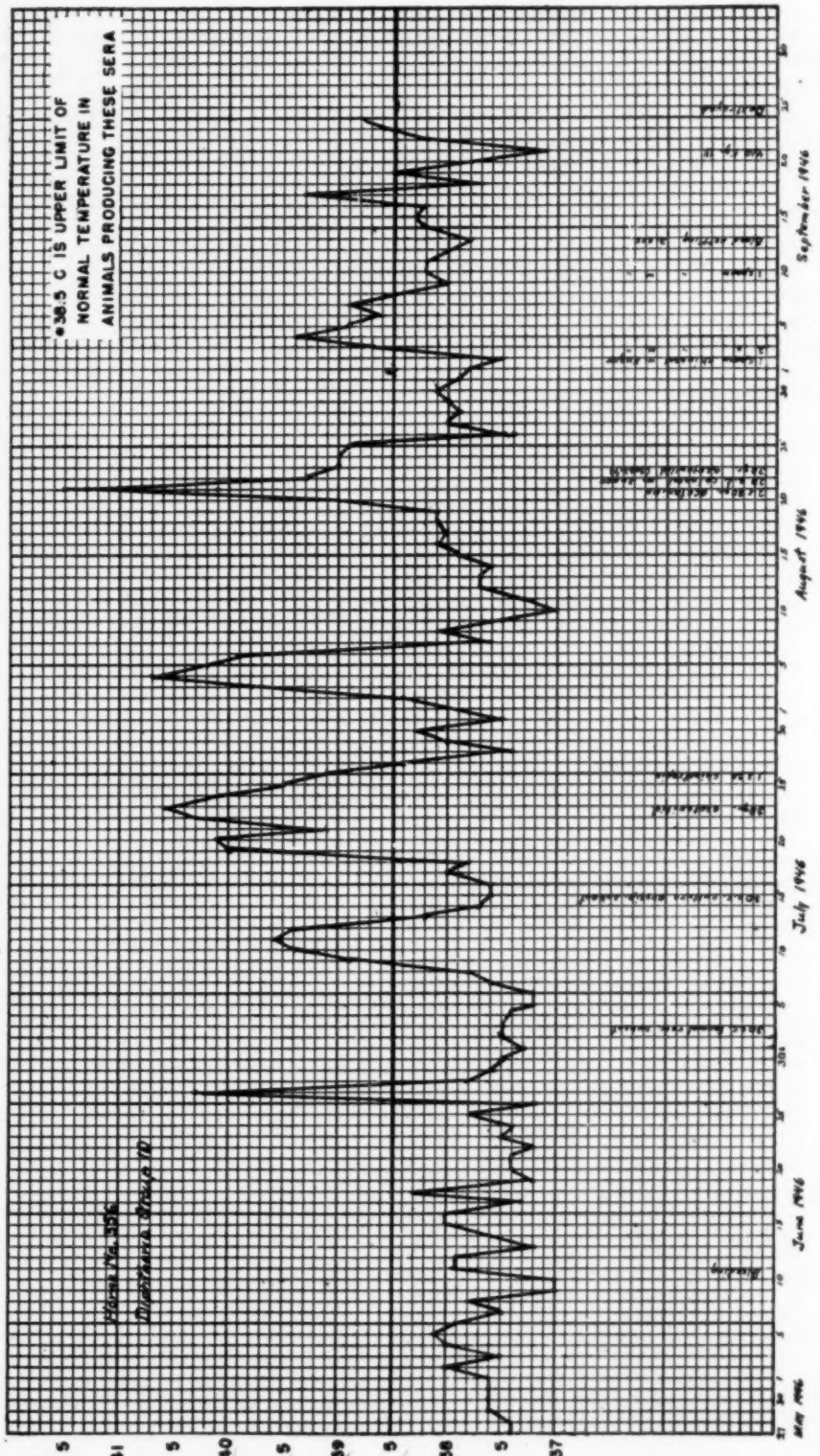
Equine infectious anemia can be introduced into herds by the addition of newly purchased infected horses. It can be spread by the continued association of susceptible animals with infected ones, such as in teams, community stables, sales barns, and pastures. It is believed that contacts of short duration are of little importance in the spread of this disease, with the exception of the short contact during copulation. After it enters a herd, its spread within the herd may be slow. Investigations have shown that the disease can be transmitted by the ingestion of infected feed and water or by the bites or stings of insects. Fortner[1, 4] states that one may successfully transmit the infection by inoculation into the blood vessel of only a minute quantity of infected blood, such as a prick of a blood-stained needle, whereas the feeding of virus-containing urine or blood meets with only irregular success and only after using large repeated quantities. He further states that the primary infection appears more frequently during warm seasons and, as in the United States, in marshy and wooded areas, together with the fact that horses stabled in cities are not often infected. Experiments showing the natural transmission of infectious anemia by flies (Tabanidae) were carried on by Fortner, of the Reichsgesundheitsamt (Office of Public Health), during the summer months of 1936-1938. In this investi-

Chief, Veterinary Affairs, Public Health Branch, Internal Affairs and Communications Division, Office of Military Government for Germany (U.S.), Berlin.

Daily Temperatures of Serum-Producing Horses with Acute Infectious Anemia



Daily Temperatures of Serum-Producing Horses with Acute Infectious Anemia



gation, insects were allowed first to bite an infected animal and then to bite susceptible ones. Nine of 15 horses were infected by this method.[1,4]

The incubation period is not constant. Generally, the period is two to four weeks. Richters,[2] of the German Army Veterinary Research Bureau, observed that of 54 artificially infected horses, 53 reacted clinically within fifty-five days. An infected animal may apparently recover but will continue to carry the virus in its system, thus being a chronic source for spread of infection.[2] The U.S. BAI recently has published reports revealing that animals can carry the virus for eleven years. The presence of virus in the system of a horse renders the animal immune to reinfection by a fresh virus.[5, 6]

Diagnosis and Treatment

Diagnosis.—Equine infectious anemia has been known for many years, but little information has been contributed toward the general knowledge of it during this period. Specific diagnostic tests are not known.

An epizoötiological investigation is of primary importance in ascertaining a diagnosis and should be made a part of each case examined. Fortner (*ibid.*) describes the clinical picture as follows:

> Acute, subacute, chronic, and latent stages are possible in infectious anemia. When an animal comes in contact with the virus for the first time, generally its reaction is clear and definite. The acute and subacute stages become apparent: Tiredness, unsteady gait, slackening in work, and lowering of physical condition in spite of relatively good feeding are the first signs which strike the attention of the owner. There is also fever, as high as 41 C. or above. The pulse is accelerated and there is weakening of the heart. When the animal moves for a short time, heart activity is stormy, throbbing, even externally visible, but it quickly quiets down again. The Circular Decree issued by the Prussian Ministry of Agriculture concerning equine infectious anemia, dated 12 May 1934, attaches special importance to examination of the heart action. It specifies that the number of heart beats are to be counted as follows: one minute before the animal is moved, and immediately after a trot of 50 to 100 meters; every fifteen seconds until it has quieted down. The increase in respiration count is scarcely noticeable when at rest, nor are there any other symptoms in connection with the respiratory system, excepting occasional slight serous nasal suppuration and occasional irritation of the pleura in acute cases. Generally, there are no symptoms connected with the digestive organs, excepting occasional slight colic. The conjunctivae are pale red or yellowish red, somewhat swollen. These and the other mucous membranes sometimes show tiny blood clots (occasionally in large numbers). Nosebleed also may occur. Thus the pale "anemic" mucous membranes do not exist in early attacks, generally they only develop some time after the disease has been contracted. Painless, thickening edemas may appear on the lower chest, belly, and limbs. The urine usually contains albumin. Skilled veterinarians may ascertain a splenic swelling by rectal palpation.
>
> If the disease becomes worse, the animal will be prostrate with continuous fever, show difficulty in breathing, tremble and groan, and will die within ten to fourteen days.
>
> When the first attack (with its accompanying fever) lasting about three to seven days has subsided, all symptoms may disappear giving an impression of complete recovery. Then, after a few weeks, the same symptoms may reappear. The alternation between attack and remission may repeat at varying intervals, but the relapses are increasingly milder and weaker. A certain equilibrium between animal and virus occurs. Nonetheless, mortal relapses have been observed during this period. If, during this state of equilibrium, the physical condition is moderate with a varying capacity for work, heart symptoms are as described above, mucous membranes are pale, and intermittent fever peaks continue to appear. We call that "chronic-progress" of the anemia. When all these external symptoms have disappeared the anemia has entered the latent stage.
>
> If we now survey the clinical symptoms described, we must admit that even the characteristic symptoms of the acute seizure merely represent the picture of a septicemia and, as such, cannot be a positive diagnosis for anemia.
>
> When the veterinarian is confronted with such symptoms he will first of all be unable to do more than express his suspicion of anemia. He must look for other means to confirm his diagnosis.[1]

Diseases such as pleuropneumonia, petechial fever, contagious catarrh of the upper bronchial ducts, and anthrax, as well as chronic diseases such as tuberculosis, tumors, malnutrition, bad teeth, and intestinal parasitism, produce symptoms similar to those associated with equine infectious anemia. In the southern part of Germany, Borna disease (equine encephalomyelitis) may further complicate the diagnosis.

Continued observation of the suspected animal is necessary in reaching a diagnosis. The recording of temperatures over a period of weeks and months of the suspected and the normal animal aids materially. The temperature picture of an animal acutely infected with infectious anemia will produce a characteristic, high-temperature curve. These curves appear during the intermittent fever attacks. In Germany, in order to receive financial aid or the removal of quarantine restrictions, proper temperature readings are required.

Fortner conducted blood tests comparing the

normal with the artificially infected animal. He observed that a clinically diagnosed, febrile case showed changes in the blood beginning a few days after the attacks, closely parallel to the symptoms in intensity and, as a rule, continuing for some time after the fever had subsided. The most significant changes were the reduction in the number of red blood corpuscles and increased sedimentation rate. Regarding the latter, a speed of over 50 per cent within fifteen minutes is considered an indication of the presence of infection. Of lesser significance are the decrease in hemoglobin content and the increase of the color index, both far less distinct. The observation that a febrile attack is always connected with neutrophilia, however, contradicts the opinion expressed in the Circular Decree of the Reichs Ministry of the Interior. After the fever subsides, the lymphocytes may increase again but as a rule will not exceed the normal figure.

Following a clinically diagnosed attack, *i.e.*, when the disease enters the chronic or latent stage, the blood picture returns to normal. Blood tests, therefore, will fail to disclose chronic and latent cases, where diagnosis actually is most urgently needed. Also, the blood picture alone may lead to false or indecisive opinions. Results of the blood examination must be combined with the clinical and epizootiological information for a final decision.

Available data indicate that the means of diagnosing equine infectious anemia is by transfusion of the blood of the suspected animal to a healthy one. This is an expensive and time-consuming test. In Germany, in order to be assured of a disease-free animal for such investigation, a pre-test, or the so-called "cross test," is made. Two horses are injected subcutaneously with 20 cc. of blood from each other. They are then observed for a two-months period, with temperatures being recorded twice daily. If 1 of the 2 animals is a carrier of the virus, the disease will be transmitted to the healthy animal which has received the blood from the infected animal. If this happens, both horses are infected and a new set of animals must be tested. If the cross test is negative, both horses are considered to be free of this virus and are used for transmission experiments. They are injected with blood from the suspected animals. After these blood inoculations are made, the animals are observed for a two-month period during which temperatures are recorded twice each day. Therefore, the cross test and transmission test require a four-month period to complete. The German army has used this test extensively. In civilian practice, it is used only where large and valuable herds are concerned.[4]

No conclusive findings are found at autopsy, but acute and subacute cases generally reveal changes in the liver and spleen. The liver shows swelling with an increase in weight, the edges are blunt, and the normal red-brown color of the surface becomes a light grey, reddish brown. The outer membrane shows a lobular design like that of a pig's liver. On cross section, it is noted that the tissue is grey-brown with a yellowish green tinge and not the normal reddish brown, and the portal lymph nodes are swollen. The spleen also shows swelling with an increase in weight, the edges are blunt while the normal greenish blue of the surface has a reddish tinge; it is soft in new cases and firm in older ones. The swelling of the spleen lymph nodes to plum size is quite usual. These nodes found in the normal speen hilus are scarcely visible.

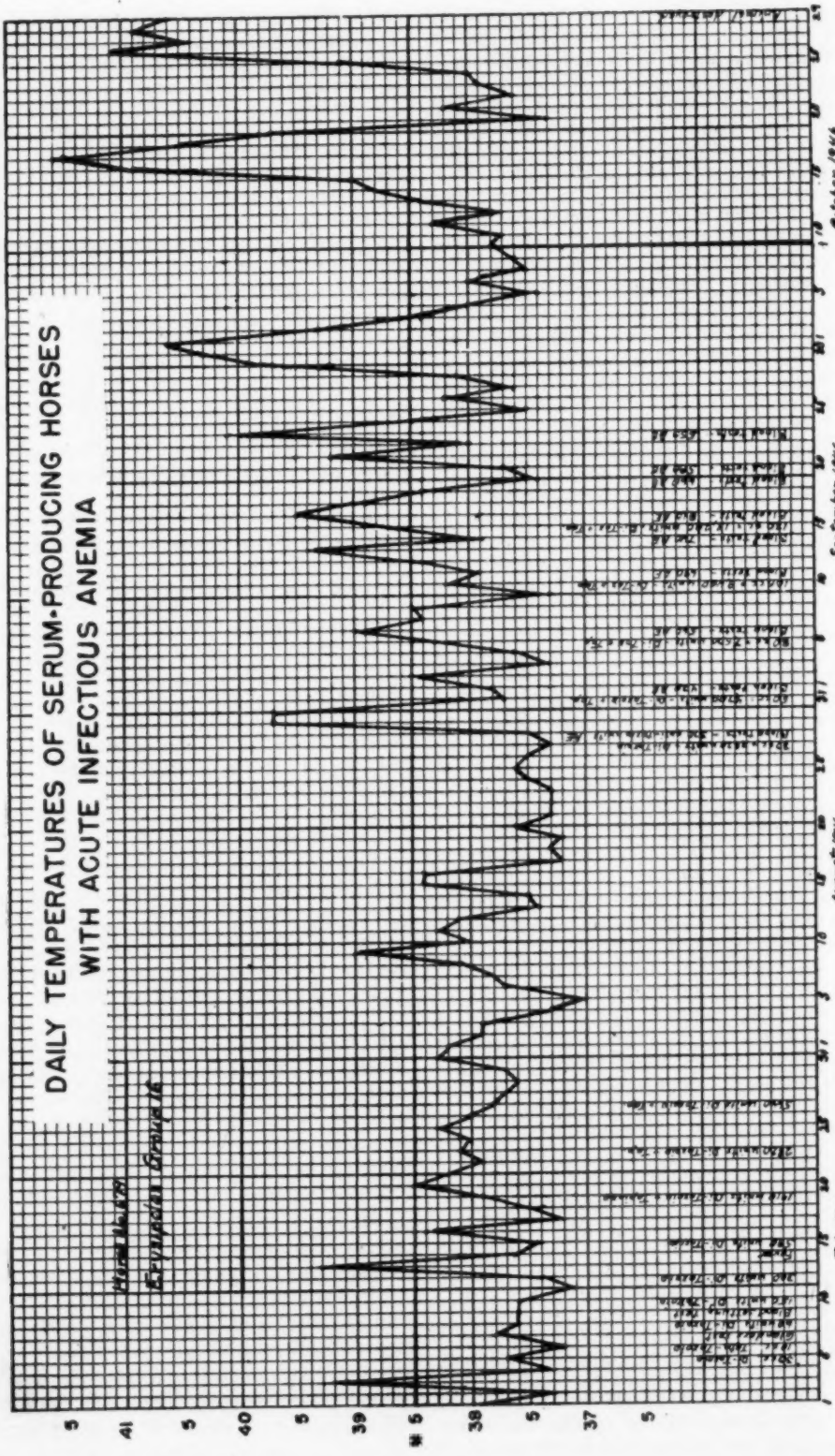
Other internal organs may show changes but the changes in the spleen and liver are most characteristic. It should be remembered that in the dissection of serum-producing animals, changes in the organs and tissues of the bodies are found which cannot be distinguished from those caused by the virus of equine infectious anemia.

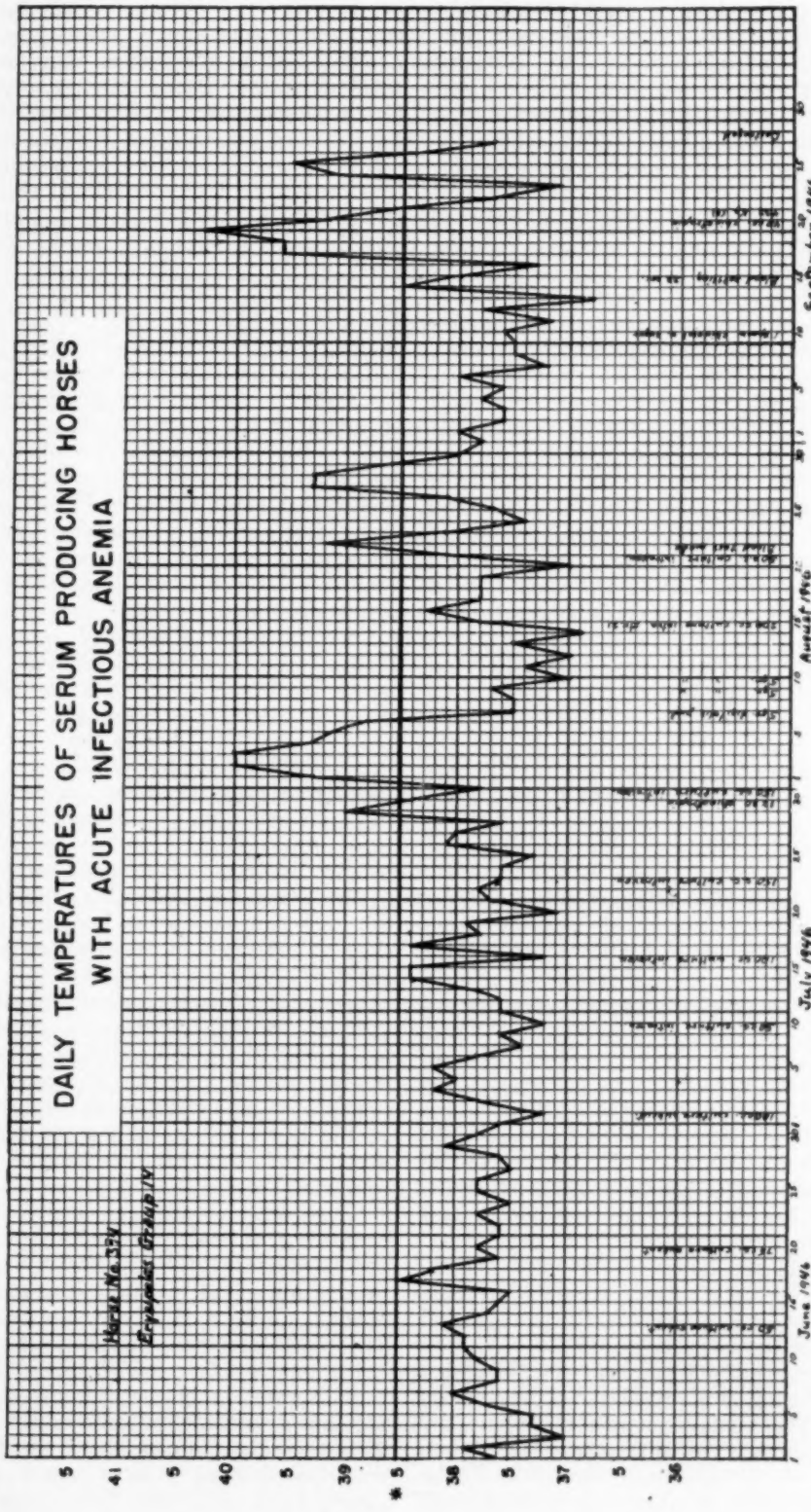
Histologic examination of the liver, spleen, and spleen lymph nodes are a necessary adjunct to the findings of the autopsy but, again, do not show specific characteristic changes. The growth and accumulation of iron in the capillary endothelium of the liver may be noted. Also lymphocytic cellular expansions may appear in this organ. The spleen shows a reduction in iron.

Treatment.—Although many methods have been tried as a cure and treatment for this disease, no successful drug or combination of drugs has been found to date.

CONTROL MEASURES

The current control measures for equine infectious anemia in Germany are based on a decree, issued Feb. 23, 1940, by the Ministry of the Interior, requiring all veterinarians to report the presence of this disease. This decree was followed by an additional circular decree, dated March 8, 1940, containing the directives on procedures to be followed in the control of the disease and of suspects. The latter decree requires the obligatory reporting by veterinarians only, because of the difficulties in making a diagnosis. (Veterinarians of slaughterhouses and laboratories are responsible along with the general practitioners.) For each case or outbreak investigated, the history covering the previous six-month period is required. The control regulations emphasize the importance of the clinical examination together with the epizoötiological investigations. In cases where symptoms indicate the presence of this disease, a detailed blood examination is not required, although the sedimenta-


DAILY TEMPERATURES OF SERUM-PRODUCING HORSES
WITH ACUTE INFECTIOUS ANEMIA
July 1946
August 1946
September 1946
October 1946
41
40
39
38
37


DAILY TEMPERATURES OF SERUM PRODUCING HORSES
WITH ACUTE INFECTIOUS ANEMIA
Horse No. 329
Erythrocyte Count 1/V
June 1946
July 1946
August 1946
September 1946
41
40
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36

tion rate of the blood is included with the clinical examination. This latter test procedure is conducted with the Behring citrate intravenous needle. Detailed blood analyses are conducted by state veterinary laboratories when needed. The decree requires the recording of temperature at the time the clinical examination is made. If necessary, temperatures must be recorded over a long period and particularly in large herds of horses where there appear to be only a few sick animals. Recording of temperatures is considered an important factor in making the diagnosis. Accurate temperature charts are still required as a prerequisite for financial aid. Since it is known that there is no effective treatment, it is pointed out that the animal should not remain on the farm to undergo treatment, but instead should be eliminated. The present decree requires that on farms infected for more than two years the elimination of the entire herd must be attempted. When this is not practicable on account of economic reasons, permanent segregation is required until such time as the animals are destroyed. On such farms, the procurement of oxen or motor vehicles for transport purposes is encouraged. The decree provides that in villages known to be infected for a long period, the export of horses is prohibited, except for slaughter. New animals may be imported into these restricted areas. Quarantine restrictions are lifted only after six months have passed, and during which no new cases appeared. Financial assistance to farmers who must destroy their infected animals is provided. A certificate from a government veterinarian stating that replacements will be obtained only from disease-free herds is required before any grants are made. In Bavaria, a sharp rise in the number of infected animals was reported following the introduction of financial aid, leading to the conclusion that a remuneration policy is necessary for an effective case-finding and control program.

Under the provisions of the meat inspection law, the meat from animals infected with equine infectious anemia is regarded as unfit for human consumption.

The fact that 0.5 per cent phenol added to horse serum and stored for three months destroys the virus provides the basis for the German law, which requires all horse serum used for veterinary purposes to be stored for three months with the addition of 0.5 per cent phenol. Some years ago, equine infectious anemia was transmitted to about 3,000 horses when they were vaccinated against Borna disease with a vaccine produced from central nerve tissues of an infected animal, and without the addition of phenol because an attenuated virus was needed. This experience led to the subsequent use of rabbits in the production of this type of vaccine.[4]

Suspected Infectious Anemia in Horses Used for Manufacture of Biological Products in Germany

During the fall and winter months of 1946-1947, infectious anemia was suspected in some of the serum-producing horses in several biological production plants in Germany. Epizoötiological investigations revealed that after VE-Day these institutions, in need of animals to rebuild their wartime depleted stocks, had acquired a number of horses from captured German Wehrmacht animals.

One or several infected animals in a stable of a German biological products plant could be the source for spreading the infection throughout the group of which they were a part, due to the type of equipment (syringes) and technique used in injecting animals for serum production. The injection equipment allows blood to flow into the needle and syringe, which will be introduced into the body of another animal.

The diagnosis of equine infectious anemia in serum-producing horses is unusually difficult, because of the changes in the tissues of animals incidental to reactions caused by products introduced into their system for the production of biological products. The blood count of a serum-producing animal may be 3/4 to 4/5 of the normal. Slight changes that might be seen in the liver, spleen, and other internal organs can be normal in a serum-producing animal.

The disease was first noticed in the serum-producing animals two or three days after the regular culture injections used in the production of antiserum. The temperature rise was 3 to 4 C. above normal, whereas the usual temperature rise following these injections is 0.5 to 1.5 C. In addition, the febrile reaction in the animals did not immediately subside as is usually observed. The temperature remained above normal for several days and in many cases rose again after returning to normal. Studies

of the temperature charts of all serum-producing animals revealed that temperature curves such as are associated with acute equine infectious anemia were recorded for these groups of suspected horses.*

Clinical examinations revealed pale and icteric mucous membranes, the intensity varying with the individual animal. Investigation of one group showed that nearly all were confined to several stables and were producing antierysipelas serum. Of one group of 250 horses injected with erysipelas culture, 96 showed a febrile reaction which could not be accounted for by the usual reactions to the antigenic material injected. Autopsies performed on selected animals did not reveal common pathologic changes that might be expected in animals with the high temperatures recorded. Slight increases in the size of the spleen and lymph nodes, but with no change in the color of the organs, were noted in some. There was a very slight swelling of the liver edges in some, while soft, pliable, and swollen livers approximately seven times the normal size were seen in others. The spleen in some cases showed evidence of acute swelling and degeneration. The heart muscles were soft, but none of these findings could be considered unusual in serum-producing animals. The other organs appeared to be normal. Blood counts and chemical tests did not show changes which could be considered abnormal in animals used for serum production.

The limited history, together with the clinical observations, particularly the febrile reactions, combined with the autopsy findings and histologic and laboratory tests, led to the decision that the condition was equine infectious anemia. All suspected animals were destroyed.

SUMMARY

1) Equine infectious anemia is widespread throughout Germany.

2) Experiments of Fortner indicating the disease can be transmitted by flies (Tabanidae) are cited.

3) The importance of a thorough knowledge of, and experience in, diagnosing this disease are emphasized.

4) Accurate diagnosis is based on epizoötiological investigations, combined with the clinical examination, together with daily temperature recordings covering a relatively long period.

5) Differential blood pictures of normal and of artificially infected animals are reviewed.

6) Current control measures in Germany are discussed.

7) Recent outbreaks of infectious anemia in the horses of several plants producing biological products in Germany are described; also the use of daily temperature charts of these establishments in the infection.

*Charts for serum-producing horses 356, 390, 394, and 679 show the unusually high persistent temperatures associated with equine infectious anemia.

We regret that the temperature charts indicating "Daily Normal Temperature Variations in Serum-Producing Horses" were not suitable for reproduction in the JOURNAL. If reduced to JOURNAL page size, they would not have been readable.—Ed.

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[6]Fortner, J.: Über das Dauervirustragertum bei ansteckender Blutarmut der Einhufer. Deutsche. Tierärztl. Wchnschr., 52, (July 15, 1944) :265-266.

Further references for this paper were drawn from personal communications between the author and Dr. Fortner; semimonthly animal disease reports of Germany for 1946-1947; activities reports of U. S. Military Government veterinary officers and German state veterinary officials; and monthly and annual reports of the state veterinary laboratories of the U. S. Zone, 1946-1947.

Research to Improve Wool

The decline of 34 per cent in wool production in the United States since 1942 is reported to be the reason for starting a research program designed to improve the quality of American-bred wool so that it may better compete with imported wools and synthetic fibers. The research will be conducted at the Western Agricultural Research Laboratory at Albany, Calif., under the sponsorship of the Research and Marketing Administration, USDA. Studies of physical structure and properties and chemical composition are intended to modify wool fiber better to meet general and specific requirements.—*From Sheep Breeder, December, 1947.*

Veterinary Public Health Administration

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THE TERM "public health," in its broadest sense, means the application of medical and scientific knowledge to insure healthy conditions of life to the individual living as a member of a community. Dr. C. E. A. Winslow, professor emeritus of public health, of the Yale School of Medicine, defines public health as "the art and science of preventing disease, prolonging life, and promoting physical and mental efficiency through organized community effort."

The veterinary profession has contributed materially to public health programs in this country. We cannot, however, rest on past laurels, as much work remains to be done.

The protection of the health of the citizens is a function of government. The needs, however, vary according to the agency involved. In addition, there are many private health agencies, supported by endowment, contributions, or subscriptions, which cover certain fields of health work, either independently or in coöperation with government agencies.

All administrative authority in our government is divided between federal, state, county, and municipal jurisdictions; but the relationship between these levels of administration is not clearly understood. It is important to remember that each level of government is entitled to maintain a certain degree of autonomy, and this presents one of the most difficult problems of administration.

There are many agencies of government, other than public health departments, which engage in public health activities, either directly or indirectly. To enumerate but a few:

A) FEDERAL AGENCIES

1) *Department of Commerce*
   a) Bureau of the Census
   b) Division of Vital Statistics
2) *Department of Agriculture*
   a) Bureau of Animal Industry
   b) Entomology and Plant Quarantine
3) *Department of the Interior*
   a) Bureau of Mines
   b) Fish and Wildlife Service
4) *Department of Labor*
   a) Division of Maternal and Child Health
   b) Children's Bureau
5) *Federal Security Agency*
   a) Food and Drug Administration
   b) Public Health Service

B) STATE AGENCIES (May vary according to states)

1) Department of Social Welfare
2) Division of Animal Industry — milk and meat
3) Fruit and Vegetable Inspections
4) Department of Natural Resources — stream and ocean pollution
5) Housing Bureau

C) LOCAL AGENCIES

1) Public Works—garbage and refuse
2) Mosquito Abatement
3) Humane Department—animal control and possibly rabies
4) Plumbing Division
5) Water Department
6) Planning and Zoning
7) Fire Prevention
8) Police Department

It can readily be appreciated, after such a review of coördinating agencies, that the job of public health administration becomes a specialized field within itself.

At the meeting of the Western Branch of the American Public Health Association held in San Francisco in May, 1947, it was pointed out that research study in public health administration was needed and should be encouraged. The importance of this was emphasized by the fact that the U. S. Public Health Service will issue stipend funds to individuals interested in carrying on such research.

It was hoped that studies of this nature would reveal methods and means of combining related functions into the proper public health agency.

The U. S. Public Health Service exercises

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no legal authority over state health departments but nevertheless its influences are keenly felt through the establishment of standards, etc. and assignment of personnel and financial assistance. A city health department may enjoy a great degree of home rule and autonomy but is subject to a certain amount of supervision from the state health department.

In public health administration, it is recognized that certain types of control should be delegated solely to the state. Probably the most outstanding example of this situation is with public water supplies and stream pollution. It is quite obvious that municipal jurisdiction could not adequately perform this function. In states where the minimum milk inspection standards are acceptable to all political subdivisions, it is advisable to adhere to the state minimum; provided, however, that the enforcement of these standards is delegated by law to the local health agencies. In states where the milk laws are nonexistent or unsatisfactory, it is mandatory that the municipalities legislate to protect their local consumers. In either case, however, it is advisable for milk inspection to be delegated to a health agency as the inevitable controversy arises between the so-called cow counties, where the milk is produced, and the urban areas, where it is consumed.

The health agencies are not, as a rule, influenced by the desire of industry to stabilize supply and demand through the medium of their inspection service; nor are they amenable to legislative pressure by the economically controlled agricultural groups. It is a fundamental fact that milk is inspected only to protect the consumer. So the health department is the agency that is logically concerned.

These statements are not intended to reflect adversely on the most excellent work done by the federal and state meat inspection services, but it must be remembered that after inspected meat and meat products leave the federal and state plants, the burden of protection rests with the local health agencies to assure wholesomeness at time of delivery to the consumer.

We are most fortunate in having the U. S. Public Health Service establish within its States Relations Division a Veterinary Public Health Section. I view this with a great deal of optimism as a revolutionary move in veterinary public health administration. While the Section is still in its infancy, its chief, our Chairman James H. Steele, has accomplished more than we had hoped for in such a short time, and he has done a wonderful job of establishing our profession in public health.

With a section such as this functioning efficiently at federal level, I anticipate that within the near future many states and municipalities will have established comparable positions. Precedent alone has dictated that the state veterinarian in most states be assigned to the Department of Agriculture; but there is no logical reason why a similar position could not be contained within the state health departments.

At the present time, veterinary public health workers may be found in many capacities in state and municipal administration. Some are in milk inspection, others in meat inspection, rabies control, and laboratory work. Still others are assigned to the bureau of sanitation, public health engineering, or food inspection.

There are almost as many ramifications of administrative authority as there are state and municipal health departments employing veterinarians. It would appear as though the establishment of a state public health position would serve to standardize administrative procedure and set a fixed pattern for municipalities within its jurisdiction. This, of course, should be closely integrated with the federal program.

Administratively, a very small percentage of the public health veterinarian's interest should be vested in the field of milk and food inspection except as relates to the diseases transmitted from animals to human beings. There is a great deal to be accomplished in the field of epidemiology, and a close working relationship between veterinarian and epidemiologist is essential. The most efficient administrative procedure is to have a veterinary division within the department, or have it as a section in the Division of Communicable or Preventable Diseases.

In either case, the personnel should act only in an advisory capacity to the Milk and Food Inspection Division. Many lay personnel in health departments are far better trained for conducting the mechanics of milk control and sanitation than is the average veterinarian.

One of the fundamental essentials of epidemiology and sound public health ad-

ministration is the prompt, accurate reporting of statistical data relating to the incidence, morbidity, and mortality rates of disease and the rapid analyses of these data. This importance is not in any way minimized in veterinary public health. Each state should make mandatory the reporting of all diseases that may be transmitted from animals to man, and the veterinarians within the state should be made conscious of the importance of such reporting. These data should be turned over to the public health veterinarian and he. in turn, should be familiar with methods of interpretation and usage.

Public health administration requires a thorough understanding and appreciation of the activities of other divisions and bureaus within the department, as none of the work is totally unrelated in all respects. A knowledge of the nursing, engineering, laboratory, rodent control, sanitation, and vital statistics divisions is needed, along with a knowledge of how their work should be correlated with the veterinary program. The same is applicable to other agencies of government.

All public health workers, but especially those engaged in any phase of enforcement, should have more than a superficial knowledge of jurisprudence and legal procedure.

It is important that we adjust our thinking so that we view the same problem in the same light as other health workers. This is what I like to refer to as "conditioned thinking."

The protection of the health of the citizen and community becomes paramount, and we cannot think of brucellosis as a disease causing loss of calf crops and sterility alone, but as a crippling disease of human beings causing untold suffering, loss of work hours, and financial distress. Rabies does not remain as an unfortunate condition of dogs and a menace to the livestock population, but rather as a killer of human beings and a stigma on public health. The dog tick must not be just another ectoparasite but a potential source of rickettsial transmission.

Participation in the activities of the American Public Health Association is important to all public health workers, and the American Veterinary Medical Association should do all possible to stimulate within it the formation of a veterinary public health section.

Such a section would assist further in the clarification of our administrative responsibility, act as a clearing house for the interchange of information, and give us association status.

At the present time, many veterinarians are affiliated with the Association (APHA), but their membership is distributed among many existing sections already related to public health; namely, engineering, food and nutrition, epidemiology, and a large number in the section of unaffiliated members. If each of these members would transfer his affiliation to a newly formed veterinary public health section, we would have the nucleus of a strong, well-rounded program with the necessary voting power in the Association to place us in a professionally secure postion.

Such an undertaking, however, is not without commensurate responsibility. We will be required, without doubt, to furnish the Association with statistical data relative to the recommended number of veterinarians needed in political subdivision, based on some tangible figures such as a human or animal population. This is now required of public health nurses, engineers, and sanitarians.

This is more easily said than done and will tax the ingenuity of both the American Veterinary Medical, and the U. S. Livestock Sanitary, Associations.

It will be our additional responsibility to set forth minimum educational qualifications for public health veterinarians, such as is required for other professional groups in public health. More veterinary graduates are becoming interested in this field, and public health needs and wants them. Adjustments in the undergraduate veterinary college curriculum and in graduate level public health training must be forthcoming to meet these needs.

To substantiate this prediction, I refer to a report by Dr. Haven Emerson, chairman of the Committee on Administrative Practices of the American Public Health Association who, in his report entitled "Local Health Units for the Nation," has statistically shown that there are only 271 veterinarians engaged in fulltime public health work in the United States, and a minimum of 570 is needed. It is up to those of us interested in this phase of veterinary medicine to see that public health is supplied with at least the minimum of trained and qualified personnel.

Even though a veterinarian devotes his entire time to practice, he is still engaged in the public health protection of his community. He should know and understand the functions of his local health agency and be in a position to offer any needed advice or service. This is a civic duty that every veterinarian owes to his community.

Repeating, in part, Dr. Winslow's definition of public health, ". . . through organized community effort . . ." it can readily be seen that full coöperation between the veterinary practitioner in a community and the officials of the health department will lead toward a wholesome relationship and crystallize a sound, well-rounded program of veterinary public health administration.

DISCUSSION

DR. VAUGHN (Texas): A general criticism, not only of this paper, but also of those I have heard in the years I have attended sectional meetings, is that we seem to adopt an apologetic attitude for our existence and education. Dr. Baum's paper did not stress it as noticeably as others in past years. I think we occupy an extremely important position among the professions, and it is up to us, locally more than nationally, to sell ourselves, our work, our training, and our capabilities, in order to gain proper recognition.

In Texas, the veterinarians have done that to a great degree. In comparing notes with veterinarians from other states, I find that, particularly in Houston, our coöperation with the other professional groups—medical, legal, etc.—is much greater than in other places I have inquired about. It is fortunate that we are in the midst of building a several million-dollar medical center in Houston, which is to include laboratories, clinical facilities, and equipment for every profession. We are going to build a new school of public health, and we have been talking about the prominent part that veterinarians will play. As a matter of fact, several veterinarians in our community have been asked to conduct various courses at the School of Public Health, although we have a medical school in Houston and one in Dallas. A veterinarian is a fulltime staff member of the school at Galveston and another is a part-time staff member of the school at Houston. That was accomplished not by an apologetic attitude of asking for our rightful place in the sun but merely setting forth what our qualifications are, what we are capable of doing, and then proceeding to do it, thereby gaining the respect of the medical and every other profession.

CHAIRMAN STEELE: It is heartening to know the local veterinarians are selling the program. Texas has done an excellent job. It is true that, through the western states, the veterinarian has a higher position in public health than in the northern states.

DR. BAUM: I don't believe that we are trying to make an apology for our existence or trying to find a place in the sun. I do, however, believe that we are the only people who are in a position to explain, to the physicians and other related persons within public health, just exactly what we can do. It is a matter of education. We must bear in mind, however, that political subdivisions vary. If a health officer in a political subdivision appreciates what a veterinarian has to offer, naturally we will have no difficulty, but in a jurisdiction where the health boards are not cognizant of that fact, the problem becomes educational.

The paper presented was merely a summary of our problems in administration. But it was not intended to justify our existence.

MEMBER (Kentucky): I do not understand the status of the veterinary public health administrator. I believe the administrative officer is always the health officer, and apparently the American Medical Association or the medical profession has insisted that the health officer must be a physician. If that is the case, then the veterinary administrator must necessarily hold a position subservient or subordinate to the health officer, who is the physician.

DR. BAUM: That is fundamentally true and I think that is the way it should be. After all, we are dealing with the health of a community and, fundamentally, we are speaking in terms of human disease when we speak of public health. I think the physician is the logical man to handle that administrative position. On the other hand, when we speak of administration, we don't always speak of the key man in administration. There is a channeling of administrative authority. For example, there is a health officer and also a sanitation section and a medical section. Who will head up those sections? Under those headings, there are further breakdowns. For example, there could be divisions of meat inspection, milk inspection, rabies control, or water supply. Each one of those divisions would have its own director. That would be classed as administrative channeling. But, on the other hand, I will refute one statement you made. There are many small municipalities and even counties throughout the United States with veterinarians as health officers.

SAME MEMBER: That is exactly my point. I see no reason why we should take a back seat in any community, whether it is in the small community or the large. The physician is certainly in no better position than the veterinarian to head all the sections or to oversee all the phases in public health administration. Indeed, the veterinarian is much better trained to oversee a good many of the phases. I feel he should fight for the right to be the health officer of the community and, if necessary, to hire the physician; not have the physician hire the veterinarian.

DR. BAUM: I admire your views, doctor, but you can't have an army with all generals. That probably is the story. When we sell the health program to the public to the same extent that the American Medical Association, the physicians, and the county medical associations have done, it may be that we can achieve this. However, all generals and no army is never a good thing.

CHAIRMAN STEELE: Are there any other questions?

DR. O. L. CAMPBELL (Illinois): In Dr. Baum's excellent paper, he made one statement that is contrary to my observations: lay sanitarians are better informed on milk sanitation than the veterinarian. As far as inspection on the dirty farm is concerned, and that is where it originates, taking veterinarians and lay inspectors with equal experience in that line of work, the veterinarian will start the farm producing good milk in weeks, maybe months, ahead of the layman, because the farmer takes his advice more seriously.

The question: Is there any reason why a veterinarian with the same training as the layman in the inspection of milk processing, pasteurizing, or creamery work, can't do just as good a job? Why not begin with the veterinarian and start to train a man for that place, if we will concede, as I must insist, that the veterinarian is better trained to begin the work on the dairy farm?

DR. BAUM: That is a good comment. I think possibly we could tie up your question with that of the man who spoke before you. If a veterinarian in a health department is to do the footwork on milk inspection, we will never reach the stage where the veterinarian is going to employ the

physician. On technical matters, there is no question about the veterinarian's superiority, but I haven't reached the point where I can agree that we should employ a scientifically and technically trained veterinarian to do the footwerk on the dairy or plant. On disease matters, yes, but why take a man with a technical training and background in veterinary medicine and place him in a barn, inspecting, etc.? He shouldn't have to see that the utensils are sterilized, that the proper amount of chlorine is used in sterilization, or that the ramp bringing the cows into the milking barn is long enough. That is not a veterinarian's fundamental job. It might be done in conjunction with his other work.

DR. CAMPBELL: If a veterinarian is going to be so specialized, there will not be enough work to keep him busy over an hour a day. I would send him to the farms to get quicker results. The farmer will listen to him. He can explain why a longer ramp is needed.

DR. BAUM: That can still be done in a coöperative way.

DR. CAMPBELL: I don't agree, and I have used both types of men.

DR. BAUM: I am speaking of comparative values. I don't like the idea of employing a veterinarian to do the work anybody can do. The same applies in restaurant inspection work. Why use a trained man to see whether they are dipping the glasses twice or three times? It isn't necessary; when technical assistance is needed in medicine or engineering it is available, and a comparable plan should be set up with veterinarians more as advisers. Otherwise, we minimize our professional status.

DR. SHABLE: The agricultural schools are giving excellent courses in milk sanitation. I have personnel in the city of Los Angeles, trained men, graduates of the California state agricultural school, and they can tell me a great deal about cheese manufacture and milk inspection. In fact, I learn much from the boys, which was not taught when I was in veterinary school. We need policemen who will see that the regulations formulated by veterinarians are enforced, similar to the men physicians employ in the enforcement of health laws. I think there would be little danger of these men taking over the veterinary profession.

CHAIRMAN STEELE: May I comment on milk and food inspection in the United States? Positions in local and state health departments are set up because of budgetary limitations, because of the type of personnel they can employ. Those positions pay between $2,400 and $3,600 per annum. It is not possible to employ competent veterinarians on such salaries. The veterinarian comes into the picture as the administrator of the food division, where his technical knowledge is needed to guide the lay sanitarians. Many of those are required to have B.S. degrees in related fields, but they are not finished, qualified administrators of a public health program. That is where veterinary public health training is necessary, — to see what the objectives of the program should be and how it should operate.

DR. S. C. DILDINE (Canal Winchester, Ohio): Who is going to determine whether cows are fit to produce milk for human consumption? If we don't have veterinarians around, this work will be detailed to laymen.

DR. BAUM: I heartily agree. The way that should be done is to have lay personnel trained to the point where they know enough to leave animals alone. That is a fundamental point. Permit the lay inspectors to make the routine inspections and tell the dairymen that the cow has mastitis and needs the attention of a veterinarian. These men can tell where mastitis is prevalent because they stand and watch the filter cottons. They order the infected cow out of the milking string and then say, "We will send the veterinarian over to see the cow. Until he says she is okay, keep her out of the herd." There is your balance. We can't afford to send veterinarians, at the comparative salaries between the sanitary inspectors and the veterinary inspectors, out on routine milking inspection work.

Of course, much hinges on the size of the municipality or the political subdivision which prevails. A large municipality can do many things not possible in a small one or vice versa. That is the situation on a local level.

DR. DILDINE: I have inspected dairy farms in all sections of the United States and have found that many public health authorities have ignored the cow. In other words, they look for clean equipment and a lot of the other things but pay no attention to the cow. Lectures by milk inspectors and others stress clean equipment and methods but neglect to mention the health of the cow. That is one thing we as veterinarians must emphasize.

DR. OSCAR SUSSMAN (Orange, Conn.): You stated that only 271 veterinarians are engaged in fulltime public health work and 570 are needed. I object to the statement. I think that probably refers to municipal meat inspectors, including men in other governmental agencies.

DR. BAUM: That was a report of local health units for the nation.

DR. SUSSMAN: Dr. Dildine questioned Dr. Baum's method of having milk sanitarians perform inspections. A study of the relation between the quality of inspection and the quality of milk showed no direct relationship. When milk examined at a receiving platform was of a quality not good enough to enter the supply for human consumption, a veterinarian was sent to check the farm, from the cow down through the equipment. The veterinarian is the only one capable of checking the equipment and the cows. The average cost per farm inspection dropped from $1.51 per visit to 75 cents, although the veterinarian was paid a higher salary. That supports the contention that we shouldn't be over anxious for lay inspectors to do the work veterinarians are better equipped to do, if we eliminated some of the unnecessary farm inspections.

DR. BAUM: Are you advocating that a municipal health agency employ only veterinarians to do their milk inspection work?

DR. SUSSMAN: Yes, I am for farm inspections.

DR. BAUM: I can't see the value when you already have technically trained milk sanitarians.

DR. SUSSMAN: From this standpoint: you say a lay inspector should know where he must stop. I have yet to meet a lay inspector who wishes to stop short of complete control.

DR. BAUM: That is strictly an administrative problem. If a veterinarian heads a food inspection and milk inspection division, it is up to the administrative officer to see that inspectors know their restrictions. In relation to the other subject you mentioned, much could be culled in the laboratory. The type of organism recovered would indicate the source—whether in the equipment, or the cow.

CHAIRMAN STEELE: We must continue with the program. We will discuss this tomorrow afternoon at the round table.

Pneumoencephalitis Virus in Hatching Eggs

DeLay, of the University of California, isolated avian pneumoencephalitis virus from the yolk sac of 4-day-old chicks, and also from chicken embryos and infertile eggs. These findings amplify the possibility that hatching eggs may be an important vehicle for transmitting pneumoencephalitis from breeding hens to their offspring. —*Science, 106, Dec. 5, 1947: 545-546.*

The Public Health Aspects of Veterinary Medicine

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THE PUBLIC health aspects of veterinary medicine have been, and continue to be, a subject of considerable concern to the California State Department of Public Health. As a representative of the Department, it is my privilege to tell you of the factors which motivate that concern, and to discuss with you our mutual interests and responsibilities.

FUNCTIONS OF VETERINARY MEDICINE IN PUBLIC HEALTH

Traditionally, to veterinary medicine have been attributed four major functions in the field of public health:

1) Meat inspection.
2) Milk sanitation.
3) Animal products inspection.
4) Control of animal diseases directly transmissible to man.

In the first of these functions, meat inspection, the veterinary profession has contributed much, largely through the efforts of the federal Bureau of Animal Industry. Among the states, California is one of the few providing state-wide meat inspection. There can be no question of the intent of the law to protect the public from the dangers of infected, infested, and spoiled meat and meat food products.

Likewise, in the second of the veterinary functions in this field, *i.e.*, milk sanitation, accomplishment is unquestioned. The reduction in bovine tuberculosis, and its practical disappearance as a cause of human tuberculosis, is proof of success. However, the high incidence of brucellosis is evidence that the job with respect to milk sanitation is not yet completed.

The rôle of the military veterinarian in inspection of animal food products is illustrative of the responsibilities in the third phase of veterinary medicine as related to public health. The sanitary supervision of the production and preparation of cheese, butter, milk products, eggs, and poultry is a tremendous task, too frequently taken for granted. But again, praise must be diluted with criticism. Less than three weeks ago, 8 cases of severe food poisoning, with 1 death, were reported in California, attributable to bacterially contaminated animal food products. Of 84 outbreaks of food poisoning involving more than 7,000 cases in California in the past five years, 70 per cent were traced to contaminated animal food products. Trichinosis is still an unsolved problem. With 112 cases reported in the last five years and a human infection of almost 20 per cent in some parts of the state, we can well give more attention to food inspection.

The military experience in condemning vast quantities of food, incidents such as quoted above resulting from the neglect of established sanitary procedures, the development of new food-processing methods, the appearance of new food products of animal origin,—all of these point to the continuing responsibility of the veterinary profession. This responsibility is not only with law enforcement but also in the promulgation of new laws and regulations in coöperation with official agencies.

It is the fourth of the traditional functions, the control of animal diseases transmissible to man, which is of newer significance. Satisfactory meat inspection is almost complacently assumed, emphasis on milk sanitation continues with scattered exceptions, and the inspection of animal food products has gained increasing acceptance and importance following the war. Such ready praise cannot be given to efforts in the control of animal diseases transmissible to man, if morbidity and mortality records are any indication.

ANIMAL DISEASES TRANSMISSIBLE TO MAN

Over the past decades, there is substantial evidence of a perceptible decline in the morbidity and mortality of those diseases in which prevention is dependent upon environmental control or upon improvement of resistance to infection by immunization. The California typhoid fever rate in 1946 was only 5 per cent of that for 1920-1924. In 1946, diphtheria was 5

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per cent as frequent as in 1920-1924, and there was less than 1 per cent as much smallpox. Diphtheria, typhoid, smallpox, and whooping cough were all less than 25 per cent as frequent in 1946 as in 1930-1934.

This is not entirely the case with the animal diseases transmissible to man. The principal diseases of concern in this respect are rabies, brucellosis, psittacosis, encephalitis, anthrax, relapsing fever, and tularemia.

The present rabies situation in California is a disgrace to the state. Rabies is practically unknown in England, Australia, Holland, and the Scandinavian countries. It has been reduced to a negligible figure in Massachusetts and substantial progress in control is noted in New York, Georgia, and other states. But California, even with the knowledge and techniques of rabies control at hand, admitted 413 cases of animal rabies in 1946, the lowest figure in twenty years. The number of cases varies from 400 to 2,000 annually on a somewhat cyclic basis from year to year, with reported infections of dogs, cats, horses, cattle, rats, goats, and wild animals. The presence of the infection in wild animals, as illustrated by proved cases in foxes, wolves, wildcats, coyotes, rabbits, squirrels, skunks, opossums, and bob cats, presents a potential danger not only to wildlife, but to livestock and human beings. Two authentic cases of rabid wild animals attacking human beings have been reported in recent months. The economic loss of animal life from rabies cannot be accurately estimated. More than 2,900 dogs have died of rabies in the past five years, and the number sacrificed because of exposure will never be known. The incidence of infection in horses is probably not fully appreciated. Three cases of suspected equine encephalomyelitis coming to the attention of the health department in the past two years proved to be rabies.

The economic loss is second to the considerable danger to human beings. In the past ten years, there have been 18 human deaths from rabies in California, and an unknown number of individuals subjected to the potential hazards of antirabies vaccination. When we consider that the average antirabies treatment costs approximately $50, then the conservative estimate of three treatments for every reported rabid dog indicates that it is expensive to neglect rabies control.

Undulant fever continues to be a disease of no small concern in California. Although the mortality is low, the prolonged disability associated with infection is frequently a severe economic handicap to the individual and his family. The minimum period of disability in a series of recent cases was approximately five weeks. Although means of control are at our disposal, the number of reported cases continues at approximately 300 annually, with no evidence of a downward trend. Two-thirds of the reported cases are attributed to the use of raw milk and raw-milk products.

Psittacosis, or parrot fever, has returned to prominence in the past year, when seven human cases were reported. Although treatment with penicillin has substantially reduced the mortality, there continues to be a prolonged period of disability associated with each infection. The economic consequences to the patient and the aviary owner are considerable. Recent regulations by the United States Public Health Service forbid the commercial shipment of psittacine bids in interstate commerce.

Among the diseases of wild animals transmissible to man, typhus, tularemia, Rocky Mountain spotted fever, and relapsing fever continue to take a toll of suffering, disability, and life. Plague, from which 1 human death has recently been reported, constitutes an ever serious threat of the first magnitude. Although most of these diseases are not directly transmissible, wild animals serve as a reservoir. Vector control is not the only nor the cheapest method of control. Eradication of rodent foci is a basic problem.

In recent months, a relatively new disease of animals transmissible to man has been reported in California. Q fever in man is an acute infection, closely resembling virus pneumonia. It is characterized by sudden onset, high fever, and extreme debility. As it was originally reported from Queensland, Australia, it gained its name of Q fever. In that country it is transmitted by ticks. In the United States, the reported outbreaks have occurred in slaughter houses and dairies and are believed due to the inhalation of dust containing feces of ticks which feed upon cattle. The most recent outbreak of 15 cases was reported from a dairy section in Los Angeles County. Al-

though the mortality is low, disability is pronounced and prolonged.

Equine encephalomyelitis is another animal disease transmissible to man. Our knowledge of its epidemiology is limited and the reported incidence of infection is inaccurate. On the basis of present information, it cannot be said that control of the infection in horses would eliminate human infection. However uncertain and tenuous may be the relationship between equine and human cases, there is no question of the economic significance of the equine disease to the horse owner.

The gradual but dramatic reduction in mortality and morbidity of infectious diseases has not been without exceptions, particularly in the field of animal diseases transmissible to man. Granted that bovine tuberculosis has been virtually conquered in the United States, why have not the same successful measures or ones of similar character been applied to brucellosis? Why does rabies continue to be ever-threatening, particularly in California? Why are we so deficient in fundamental information concerning equine encephalomyelitis? Why must diseases like typhus, Rocky Mountain spotted fever, and tularemia claim a disproportionate amount of the epidemiologists' time?

VETERINARY MEDICINE NOT APPLIED TO PUBLIC HEALTH

The answer to these questions, and more of similar character which might be propounded, lies in the failure to apply veterinary medicine to public health, failure not of the veterinarian alone but of the entire public health profession.

This failure can be attributed to a number of factors. First, and probably most fundamental, is the failure of the public health officer to recognize the contribution that veterinary medicine can make to public health. The health officer has been negligent in stimulating veterinary interest, not only in the control of animal diseases transmissible to man but in such fundamentals as meat, milk, and food inspection. Too frequently, such responsibilities have been left completely to well-intentioned but inadequately trained sanitarians.

Secondly, the failure to utilize the knowledge and skills of veterinary medicine in public health to the greatest effectiveness is attributable to the attitude of the veterinarians themselves. It is the impression, rightly or wrongly, of many public health workers that no medical or allied professional group has so little public health consciousness or interest as the veterinary profession. Such a statement is made with full awareness of the reaction it may engender. But if that be the case, is it not time that, for the sake of the public if for no other reason, we examine the reasons behind this condition, or substantially deny it and proceed with a joint program in our fields of mutual interest?

This attitude, which I attribute to the veterinary profession at large and to no one veterinarian in particular, is perhaps due to a failure of the veterinarian to understand the public health organization, its objectives, and its methods. There has also been a lack of joint planning, a failure to define spheres of interest and responsibility. Of the relationship among state agencies, I shall speak later. It is on the operating level in the local health department that the need for understanding and mutual endeavor is greatest. In some instances, this springs from failure of state and federal agencies to provide leadership and consultation.

THE ORGANIZATION OF THE PUBLIC HEALTH DEPARTMENT

The public health organization in California consists of a state department of public health and county and city health departments providing services to approximately 90 per cent of the population, but scarcely 60 per cent of the area. The local departments are neither branches nor agencies of the state department. The relationship between them is one of consultation and assistance, not of superior and subordinate in a chain of command. The activities of the state department are largely limited to matters of policy, provision of consultant services, assistance in planning, financing and training, and special investigation, whereas the activities of the local department are concerned with the actual operation of a given service.

It is here at the local level that the veterinarian, whether he be in private practice or an employee of a public agency, can make the greatest contribution to public health. I believe it his duty and responsibility to know the local health officer per-

sonally. He should be aware of the local public health problems which concern the veterinary medical profession, of the attitude of the health officer concerning the possible solutions to such problems. If he is the employee of an official agency, the approach to veterinary public health problems should be by joint planning and properly designated action. Undoubtedly, the veterinarian will find communities, perhaps many of them, where a noncoöperative health officer denies the existence of problems of interest and concern to the veterinarian or perhaps fails to recognize the value of joint planning and action with other groups. In such instances, I believe it the responsibility of the veterinarian, through tactful leadership and community education, to demonstrate such problems and to suggest a possible solution.

The California State Department of Public Health operates on the policy that the diagnosis, treatment, and control of disease in animals is primarily a veterinary responsibility. When those diseases are transmitted to man, or transmission is threatened, then administrative responsibility for control measures is delegated to the health officer. Section 200 of the Health and Safety Code provides that "the State Department of Public Health shall examine into the causes of communicable disease in man and domestic animals occurring or likely to occur in the state," and Section 205 states, "It may commence and maintain all proper and necessary actions and proceedings . . . to protect and preserve the public health."

Consider a specific example. A program for the eradication of rabies must embrace the following points:

1) The licensure of all dogs.
2) A pound system, implying:
   a) Collection and destruction of stray dogs.
   b) Isolation of suspected rabid dogs.
   c) Quarantine of animals bitten by other rabid animals.
3) Annual vaccination of all dogs.
4) Public education.

The department has advised that the administration of such a program "will be most satisfactory if it is under the supervision and direction of the health department. The program should be under the direct supervision of a rabies control officer, who is preferably a veterinarian." In the program outlined, the determination of clinical rabies or suspected rabies in animals is a veterinarian's responsibility, as is the animal vaccination program. The State Department of Public Health has no more desire or intent to interfere with the private practice of veterinary medicine than with human medicine. But if there is not satisfactory evidence of veterinary coöperation and participation in such programs, then the health department has no alternative but to do the work itself. For example, New York State has recently adopted a compulsory antirabies vaccination law which provides the vaccination "shall be conducted under the direction of the board of supervisors by the local health officers. . . ." Past experience in several fields has all too frequently indicated that when local agencies fail to take the initiative and accept responsibility, it is soon assumed by the state and federal agencies. Local action and responsibility is to be preferred to state and national regulation, I believe.

The relationship between the veterinarian and the health officer is inseparably associated with the veterinarian's responsibilities in the public health field. As I have indicated, we in the health department are deeply interested in the veterinary aspects of public health, and we intend to develop these phases of our total program. We anticipate the active interest and coöperative participation of the veterinary profession.

In addition to the traditional functions of veterinary medicine in public health, there are further responsibilities in this field. I do not refer to the somewhat philosophical consideration of the dependence of man upon his animal food supply for proper nutrition and good health, nor to the relationship of national economies to a successful animal industry.

VETERINARY EDUCATION IN PUBLIC HEALTH FIELD

Veterinary education has a public health responsibility. The oncoming classes of veterinarians must be taught the practice of public health and be indoctrinated with that philosophy. Without a knowledge of such organization and objectives, duties, and responsibilities, and a desire to participate in and contribute to public health, they will be no better than their predecessors. I do not know how many schools of veterinary medicine provide instruction in this field beyond a routine milk, meat, and food

inspection course, but I dare say they are limited. If future veterinarians are to assume their proper place in public health and gain the deserved recognition and support of their program, veterinary educators must teach "how, why, when, and where" to assume responsibilities in this field. Perhaps it would not be amiss to state that such education should not be limited to future veterinarians.

The veterinarian has a public health responsibility in lay education as well as in professional education. Lack of knowledge by the general public of the veterinary contribution to public health has handicapped important programs. Rabies control is again the classic example, for which we both share the responsibility for failure.

Veterinary medical research has made substantial contributions to public health in the past. This is particularly true in the development of biologic products for the prevention and treatment of human disease. Much of the progress in human physiology, anatomy, and pathology has been built upon basic contributions to science by the veterinarian. The contribution of laboratory animals to human welfare cannot be estimated. Again, fundamental knowledge has been contributed by the veterinarian. In all of these phases there are further opportunities for investigative work which will contribute to progress in public health. Research opportunities in such fields as veterinary bacteriology and epidemiology must not be overlooked. Our woefully inadequate knowledge of the immunology and epidemiology of equine encephalomyelitis is a pronounced handicap in the battle against human encephalitis. The animal reservoirs of many infections have not been thoroughly determined. Wildlife research is essential to the control of plague, relapsing fever, tularemia, and other less well-known diseases. The field of administration of veterinary programs as they relate to public health is relatively unstudied.

CONCLUSION

I have discussed at considerable length the public health aspects of veterinary medicine in their traditional concepts as well as in the fields of veterinary education and research. In conclusion, I should like to emphasize that the California State Department of Public Health, in recognizing these veterinary responsibilities, desires to stimulate their development and application in that field. We recognize mutual interests and joint responsibilities as well as the prerogatives of the veterinary profession. We have no desire to interfere with those prerogatives and hope for the more active participation of the veterinary profession in public health services. This can come about only through a better understanding of public health activities and a positive contribution to those services by the veterinarian.

A veterinarian has been employed to interpret to the health department the policies and practices of the veterinary profession, and to advise the profession of departmental interests and objectives. Those aspects of the state public health program pertaining to veterinary medicine are his responsibility. It is not our intent to try to assume for him or other veterinarians who may be associated with the department those duties now being discharged in agencies other than the Department of Public Health.

The veterinarian of our staff is your ambassador to the Department. I can assure you that in his work to date, he has had the utmost coöperation from members of the State Department of Agriculture, and the sound advice and vigorous support of the members of the veterinary staff of the University of California have been of inestimable value to us. Their contributions in planning programs, in developing working relationships with many agencies and individuals, and their encouragement in the veterinary research activities of the Department in the relationship of equine to human encephalitis have been substantial. It is the sincere desire of the California State Department of Public Health that these pleasant and valuable relationships be extended to the veterinary profession in general. With patience, with understanding, and coöperative participation in planned programs, the veterinary profession can make a substantial contribution to the public health of the citizens of California. I further hope that you will provide national leadership through demonstration and education in the development of a phase of public health too long neglected.

"The Golden Gate in '48"

Intratracheal Insufflation Anesthesia

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INTRATRACHEAL insufflation anesthesia has a number of advantages.[1] For nine years, we have compiled the results of 1,601 operative cases in our hospital in which intratracheal insufflation anesthesia was used, and my appreciation has grown proportionately with its use. Of these 1,601 cases, 961 were dogs 5 years old and under, 445 were between 6 and 9 years of age, and 195 were between 10 and 16 years. There were 22 deaths.

Nine that died within two hours were considered preventable deaths and good operative risks. Of these 9 deaths, 1 was in conjunction with nembutal; 1 was operative hemorrhage; 2 were on induction while being anesthetized with the ether cone; 3 were postoperative, in that they were not watched closely after the operation and did not come out of the anesthesia; 2 were cats.

Thirteen others were poor operative risks, and were considered nonpreventable deaths. Of these, 2 were foreign body operations, 1 hepatitis, 4 dystocia, 1 amputation, 1 diaphragmatic, 3 pyometritis, and 1 prostate.

As a result of this compilation, I can say there were no anesthetic deaths in dogs following the induction period with this method of anesthesia.

The percentage of loss in old dogs between 10 and 16 years was not any greater than on young dogs, and this may be attributed to greater care. We have no trained anesthetists, and the deaths that did occur were due to the economical scale on which we have to practice (lack of adequate help).

Intratracheal insufflation anesthesia is the blowing of air over ether, with this mixture carried directly into the trachea by rubber tubing. The animal is anesthetized with the ordinary ether cone, and when it is in the stage of anesthesia the jaws are held open, the tongue pulled out with forceps so the glottis is readily enterable, and a rubber catheter inserted into the trachea through the larynx with a Kelly clamp. The tube is tied with a small rope around the base of the head to hold it in place. Then the catheter is connected to the rubber tubing and the ether-air mixture is used from then on during the anesthesia. A catheter smaller than the inside lumen of the trachea is used so that the expirations can escape. The bottle containing the ether, the Woulff bottle, has a stoppered opening for inlet and outlet, and a third opening for filling the bottle with ether. The inlet and outlet opening have T tubes with Y tubes on the adjoining tubing forming by-passes in which one can increase or decrease the strength of the mixture. Be sure the animal is under deep anesthesia, and has passed through the preanesthetic stage, before attempting insertion of the tube for, if not, the patient will become excited, dislocating the trachea tube with the probability that the tube may come back into the pharynx. Then the vapor will enter the esophagus, inflating the stomach and intestines. It is also important to have the pressure low enough so that the force of the mixture is not too strong, as a strong mixture is not tolerated, resulting either in an uneven anesthesia or lack of complete anesthesia.

In the past, we used a machine consisting of a small dynamo and centrifugal pump that gave a constant flow. It was too noisy to be in the operating room. Now we have a small 1- by 2-ft. tank, with pump and automatic motor set up on the floor below, that pumps a constant flow of air

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up into the operating room through copper tubing. The air pump is automatic in that it goes on when the air pressure in the tank becomes low, thus giving a constant air flow that is noiseless in the operating room, allowing the added safety of hearing the animal's respirations. A valve connection in the line before the air enters the Woulff bottle permits control of the force of air volume. There is also a control switch to turn the motor on and off.

TABLE I—Nine Cases which Died after Use of Intratracheal Insufflation Anesthesia

Triplett	Castration	Nembutal basal	On table
Greenbaum	Spay	Postoperative hemorrhage	On table
Carey	Spay	Induction	On table
Cook	Spay	Induction	On table
Causey	Spay	Postoperative	Less than 2 hr.
Schmidt	Slight pyometritis	Postoperative	Less than 2 hr.
Fryer	Soft palate	Postoperative	Less than 2 hr.
Brooks	Spay	Cat	On table
Gans	Spay	Cat	On table

With big dogs, such as Saint Bernards and Great Danes, we use nembutal, in addition to morphine and atropine as a basal anesthesia.

Advantages of intratracheal anesthesia:

1) Better oxygenation is obtained.
2) It is nearly fool proof.
3) There is an even anesthesia that is easily controlled and more delicate.
4) There is less waste of ether.
5) The stage of recovery may be begun earlier.
6) A clear airway is always maintained. Without an open airway the dog strains, is objectionable to the surgeon, and the anoxemia is detrimental to smooth recovery.
7) When cyanosis occurs, the inlet tube is closed and only air is forced in, thus affording a more economical means of oxygenation.
8) It is necessary in intrathoracic surgery to prevent collapse of the lung. This is done by positive digital pressure on the trachea over the inserted catheter. The pressure is synchronized so the inspiration period is longer and deeper, inflating the lung artificially. Thus, a simple means of artificial respiration is maintained.

Disadvantages of intratracheal anesthesia:

1) When ether vaporizes, heat is lost in changing from a liquid to a gaseous form; thus the liquid gradually becomes colder. The ether then reaches the state when it will not vaporize, and frost forms on the outside of the bottle after it has been in continual use for over three hours. This can be corrected quickly if the bottle is immersed in a pan of hot water, increasing the vaporization of the ether and thereby increasing the percentage of the ether mixture. This can be done at any time if a higher concentration of ether is desired in the mixture to produce deeper anesthesia.
2) If the Woulff bottle is not used within a period of three or four days, the ether deteriorates quickly, unless the bottle is painted a dark color or is kept in a closed receptacle.

Single injection intravenous anesthesia in the dog can not be compared with intravenous anesthesia in the human being for the following reasons: In the human being, anesthesia is administered in a weak dilution and fractional dosage, in conjunction with oxygen given continuously. For economic reasons, the preoperative routine blood analysis is not done on the dog, blood pressure of the dog is not manageable, and oxygen is not used routinely with the intravenous anesthesia. Even with all the armamentorium of anesthesia equipment and oxygen instantly available when intravenous anesthesia is practiced on the human being, it is deceiving to believe that it is as safe as ether anesthesia. Now with increased knowledge and experience in the preoperative preparation and postoperative care of patients, the use of saline dextrose infusions and chemotherapy in cases of shock, and dehydrations, and acute and chronic infections, enables us each year to decrease the percentage of anesthetic deaths.

The anoxemia that develops as the result of prolonged ether anesthesia may be lessened by intratracheal insufflation and further helped when the operation is completed by increasing the amount of air intake and occluding the ether tube inlet.

Intravenous anesthesia, in the form of barbituric acid derivatives, is relatively safe if the following are considered:

1) There is a wide margin of safety between the minimum hypnotic dose and the minimum lethal dose, but the margin is small between the anesthetic and lethal dose in any concentration.
2) It is useful in operations of short duration on selected cases.

Intratracheal Insufflation Anesthesia

JOHN D. GADD, V.M.D.
Towson, Maryland

INTRATRACHEAL insufflation anesthesia has a number of advantages.[1] For nine years, we have compiled the results of 1,601 operative cases in our hospital in which intratracheal insufflation anesthesia was used, and my appreciation has grown proportionately with its use. Of these 1,601 cases, 961 were dogs 5 years old and under, 445 were between 6 and 9 years of age, and 195 were between 10 and 16 years. There were 22 deaths.

Nine that died within two hours were considered preventable deaths and good operative risks. Of these 9 deaths, 1 was in conjunction with nembutal; 1 was operative hemorrhage; 2 were on induction while being anesthetized with the ether cone; 3 were postoperative, in that they were not watched closely after the operation and did not come out of the anesthesia; 2 were cats.

Thirteen others were poor operative risks, and were considered nonpreventable deaths. Of these, 2 were foreign body operations, 1 hepatitis, 4 dystocia, 1 amputation, 1 diaphragmatic, 3 pyometritis, and 1 prostate.

As a result of this compilation, I can say there were no anesthetic deaths in dogs following the induction period with this method of anesthesia.

The percentage of loss in old dogs between 10 and 16 years was not any greater than on young dogs, and this may be attributed to greater care. We have no trained anesthetists, and the deaths that did occur were due to the economical scale on which we have to practice (lack of adequate help).

Intratracheal insufflation anesthesia is the blowing of air over ether, with this mixture carried directly into the trachea by rubber tubing. The animal is anesthetized with the ordinary ether cone, and when it is in the stage of anesthesia the jaws are held open, the tongue pulled out with forceps so the glottis is readily enterable, and a rubber catheter inserted into the trachea through the larynx with a Kelly clamp. The tube is tied with a small rope around the base of the head to hold it in place. Then the catheter is connected to the rubber tubing and the ether-air mixture is used from then on during the anesthesia. A catheter smaller than the inside lumen of the trachea is used so that the expirations can escape. The bottle containing the ether, the Woulff bottle, has a stoppered opening for inlet and outlet, and a third opening for filling the bottle with ether. The inlet and outlet opening have T tubes with Y tubes on the adjoining tubing forming by-passes in which one can increase or decrease the strength of the mixture. Be sure the animal is under deep anesthesia, and has passed through the preanesthetic stage, before attempting insertion of the tube for, if not, the patient will become excited, dislocating the trachea tube with the probability that the tube may come back into the pharynx. Then the vapor will enter the esophagus, inflating the stomach and intestines. It is also important to have the pressure low enough so that the force of the mixture is not too strong, as a strong mixture is not tolerated, resulting either in an uneven anesthesia or lack of complete anesthesia.

In the past, we used a machine consisting of a small dynamo and centrifugal pump that gave a constant flow. It was too noisy to be in the operating room. Now we have a small 1- by 2-ft. tank, with pump and automatic motor set up on the floor below, that pumps a constant flow of air

Presented before the Section on Small Animals, Eighty-fourth Annual Meeting, American Veterinary Medical Association, Cincinnati, Ohio, Aug. 18-21, 1947.

up into the operating room through copper tubing. The air pump is automatic in that it goes on when the air pressure in the tank becomes low, thus giving a constant air flow that is noiseless in the operating room, allowing the added safety of hearing the animal's respirations. A valve connection in the line before the air enters the Woulff bottle permits control of the force of air volume. There is also a control switch to turn the motor on and off.

TABLE I—Nine Cases which Died after Use of Intratracheal Insufflation Anesthesia

Triplett	Castration	Nembutal basal	On table
Greenbaum	Spay	Postoperative hemorrhage	On table
Carey	Spay	Induction	On table
Cook	Spay	Induction	On table
Causey	Spay	Postoperative	Less than 2 hr.
Schmidt	Slight pyometritis	Postoperative	Less than 2 hr.
Fryer	Soft palate	Postoperative	Less than 2 hr.
Brooks	Spay	Cat	On table
Gans	Spay	Cat	On table

With big dogs, such as Saint Bernards and Great Danes, we use nembutal, in addition to morphine and atropine as a basal anesthesia.

Advantages of intratracheal anesthesia:

1) Better oxygenation is obtained.
2) It is nearly fool proof.
3) There is an even anesthesia that is easily controlled and more delicate.
4) There is less waste of ether.
5) The stage of recovery may be begun earlier.
6) A clear airway is always maintained. Without an open airway the dog strains, is objectionable to the surgeon, and the anoxemia is detrimental to smooth recovery.
7) When cyanosis occurs, the inlet tube is closed and only air is forced in, thus affording a more economical means of oxygenation.
8) It is necessary in intrathoracic surgery to prevent collapse of the lung. This is done by positive digital pressure on the trachea over the inserted catheter. The pressure is synchronized so the inspiration period is longer and deeper, inflating the lung artificially. Thus, a simple means of artificial respiration is maintained.

Disadvantages of intratracheal anesthesia:

1) When ether vaporizes, heat is lost in changing from a liquid to a gaseous form; thus the liquid gradually becomes colder. The ether then reaches the state when it will not vaporize, and frost forms on the outside of the bottle after it has been in continual use for over three hours. This can be corrected quickly if the bottle is immersed in a pan of hot water, increasing the vaporization of the ether and thereby increasing the percentage of the ether mixture. This can be done at any time if a higher concentration of ether is desired in the mixture to produce deeper anesthesia.
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1) There is a wide margin of safety between the minimum hypnotic dose and the minimum lethal dose, but the margin is small between the anesthetic and lethal dose in any concentration.
2) It is useful in operations of short duration on selected cases.

3) As a basal anesthetic in combination with ether and oxygen for operations of long duration, it is useful as induction in which it is used first, whereupon the trachea tube is inserted and the transfer made to insufflation anesthesia.

4) It seems to be contraindicated in cases of cardiac and pulmonary insufficiency, asthma, shock, toxemias, and anemias, unless it is used in conjunction with oxygen on operations of short duration.

Maintenance of a clear airway is most important during anesthesia and during the postoperative period. The snoring sounds heard during anesthesia are from the relaxation and flapping of the soft palate. In short muzzle dogs, the soft palate and epiglottis with their relaxation can occlude the orifice of the larynx. Schnelle[2] feels that deaths attributed to other causes are often due to not maintaining a clear airway. This occlusion may best be prevented by the use of a trachea tube and insufflation anesthesia. It is better to give air alone when the operation is nearly completed, and for several minutes after, lessening the chance of death due to occlusion of the airway on cases of poor anesthetic risk.

To obtain deep muscle relaxation which is necessary for any abdominal surgery with pentothal anesthesia (which is the safest of any of the barbital derivatives), the oxygen level in the capillaries is so low that the patient is nearly in a moribund state. With ether anesthesia, the respirations stop first and the heart beat continues. With artificial respiration and forced air, the animal can be brought back even after it has stopped breathing for five or ten minutes. With intravenous anesthesia, if the respirations stop, the heart stops quickly afterward, necessitating much more dramatic recourse with not nearly as good results.

CONCLUSIONS

Maintenance of a clear airway and adequate oxygenation of the blood during the operative and postoperative period should be of more importance in lowering operative fatalities. Adequate preoperative preparation with saline, dextrose, and chemotherapy can prevent some deaths. We found that intratracheal insufflation anesthesia changed borderline surgical cases into good surgical risks.

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Hormonal Caponizing

Miss Joan O. Joshua (*Vet. Rec.*, Oct. 12, 1947) describes the technique of unsexing cockerels by implanting a 30-mg. pellet of pure stilbestrol in the neck. With the bird restrained on the right side, an assistant holds the head by crooking two fingers behind the head. As the plumage is sparse at that point, plucking feathers is not necessary. The feathers of the site are dampened down with alcohol. A fold of skin, free of blood vessels, is picked up with the dressing forceps and snipped with scissors transversely to the long axis of the neck. The pellet of stilbestrol is carried caudad ¼ to ½ in. through the incision with forceps of the canine aural type and the incision closed with two interrupted silk sutures or a mattress suture. Care is taken not to crush the pellet. The operation is performed in birds kept well beyond maturity. Gains were greater than in untreated cockerels. The best results were obtained in birds of 12 to 16 weeks in the light breeds and 16 to 20 weeks for the heavy breeds.

The development of anesthesia has been delayed largely by ignorance of the anesthesia process. Anesthetists are often so dominated by traditional ways that they pass by opportunities for rationalizing their procedure.—*H. K. Beecher, M.D., Annals of Surgery, Oct., 1947.*

Calcium and Magnesium Therapy

Subcutaneous injection of calcium or magnesium produces an elevation of the element in the blood less rapidly but for a longer period than does intravenous injection. The latter should be used only when immediate elevation is imperative and should then be accompanied by subcutaneous medication, says Allcroft of Weybridge, England (*Vet. J., 103,* (May, 1947) : 157-176). He reports that the anesthetic level of serum magnesium in the ruminant is about 14 mg. per 100 cc., and the lethal level about 20 mg. per 100 cc.

The Right Oviduct in Chickens

H. D. WEBSTER, D.V.M.
East Lansing, Michigan

FEMALE chickens in the early embryonic stages show bilateral development of the genital system; however, the right ovary and its oviduct normally degenerate as the embryo develops so that, by hatching time, only vestiges of these organs remain. Nevertheless, there are several recorded instances of paired ovaries and/or oviducts in adult chickens.

Kirkpatrick and Card[1] mentioned a White Wyandotte hen that had two ovaries and two complete oviducts, with both sets of organs functioning. Kaupp[2] photographed the genital organs of a hen showing two functional ovaries and oviducts. McKenney[3] reported that persisting right oviducts were found during autopsy in 2 of 450 chickens of various breeds and ages. In 1 chicken, the right oviduct was thought to be functional in that six ova in varying stages of degeneration were found in the lumen. Crew[4] observed a Brown Leghorn hen having a normal left ovary and completely differentiated left and right oviducts. The hen had received a right testis graft which he discounted as being a factor in the development of the right oviduct. He reported a Wyandotte hen with a degenerate left ovary and nonconvoluted left and right oviducts similar to the normal left oviduct of a nonlaying hen. Crew also stated that rudiments of a right oviduct are fairly common and that these rudiments range in size from a minute sac, attached to the cloaca, to a blind, convoluted tube about 5 cm. long when extended, and 2 cm. wide, supported by a peritoneal fold and distended with a clear watery fluid. Asmundson and Burmester[5] mentioned that in examining over 200 hens, 2 were found with rudimentary right oviducts and 1 with a complete right oviduct which was apparently capable of functioning. Quinn *et al.*[6] reported a Rhode Island Red pullet

From U. S. Regional Poultry Research Laboratory, East Lansing.

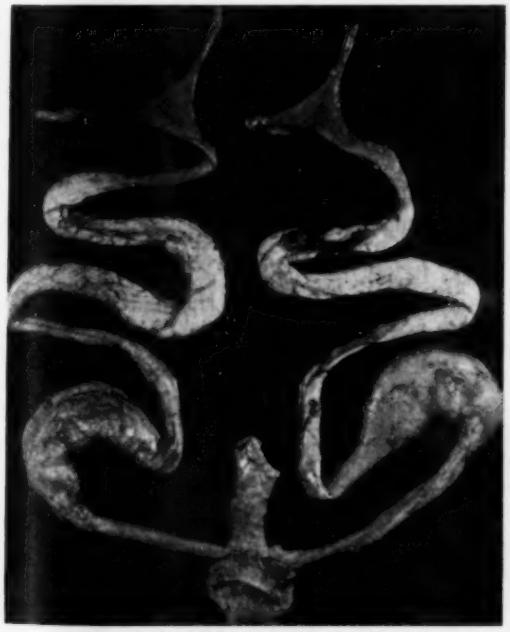


Fig. 1—Left and right oviducts of bird H530A (ventral view). Note the complete development of the right oviduct.



Fig. 2—Left and right oviducts of bird 11457P (ventral view). Note the complete development of the right oviduct.

with two fully developed oviducts. The right oviduct was 25.0 cm. in length and the left about 37.5 cm. Bryant[7] reported a Single Comb White Leghorn pullet with a right oviduct slightly shorter than the left and normal in every respect for a hen not in production.

It is evident from a review of the literature that very little has been recorded concerning the dimensions of the well-developed right oviduct, still less concerning its frequency, and very little on the incidence of rudimentary right oviducts. Two birds with complete and well-developed right oviducts and one with an extremely large cystic right oviduct have been observed at this laboratory. These are reported here, together with the percentage of incidence of rudimentary right oviducts of varying lengths in a group of 65 female chickens.

MATERIALS AND METHODS

During the first seven months of 1947, approximately 3,000 autopsies were performed on Single Comb White Leghorn chickens at this laboratory. These birds were mostly females and of various ages over 30 days. The genetic history of these birds has been previously described by Waters.[8]

In the chickens with well-developed right oviducts, measurements were made on the right and left oviducts after they were separated from their attachments, stretched sufficiently to remove the convolutions, and the respective portions severed at their approximate anatomic limits. The total lengths of the oviducts were obtained by adding the lengths of the segments.

The fluid content of the large cystic right oviduct was collected for measuring by removing the right oviduct *in toto* from the body cavity of the hen, puncturing it, and holding it over a graduated cylinder.

The rudimentary right oviducts were measured after severing their attachments and stretching the oviducts to remove the convolutions.

OBSERVATIONS

Bird H530A, a pullet just starting egg production in the genetic flock of the laboratory showed a fully developed right oviduct. This bird had an uneventful history prior to autopsy at 266 days of age. It had laid 18 eggs, the last one two days before death. The left ovary was fully developed and active, having several maturing follicles. There was no macroscopic evidence of a right ovary. The left and right oviducts (fig. 1) were complete, equally well developed, and practically the same length as that given by Jull[9] for the left oviduct of a normal hen in laying condition. The right oviduct was 66.0 cm. in length and the left 70.7 cm., as compared with approximately 76.0 cm. for the left oviduct in a normal laying hen. Table 1 gives the comparative lengths of the respective segments. The lumen of both the right and left oviducts was patent throughout their entire lengths. Each opened into the cloaca on its respective side and was apparently capable of functioning in that the infundibula also were open.

Bird I1457P, another pullet just starting egg production in the experimental flock, was killed at 171 days of age to terminate an experiment. The left ovary was active, having a few maturing follicles. Four tiny spherical bodies resembling immature ovarian follicles were found at the embryologic site of the right ovary. Microscopic examination of the right gonad base disclosed that at least one of the spherical bodies described was composed of normal ovarian tissue with four small primary follicles. The left and right oviducts (fig. 2) were complete, equally well developed, and apparently capable of functioning. The right oviduct measured 57.2 cm. in length and the left 64.8 cm. The measurements for the separate segments are given in table 1. The lumen of both the right and left oviducts was patent throughout their entire length. Each opened into the cloaca on its respective side and the infundibula were open.

Bird H207U from the genetic flock was destroyed at 367 days of age owing to its inability to carry on normal activities. A large cystic right oviduct was found at autopsy, the fluid content of which was measured and found to be 1,210 cc. of a clear, colorless, watery liquid. The extreme size of the cyst had stretched the wall of the oviduct to such an extent that it was very thin and transparent.

On numerous occasions, rudimentary right

TABLE 1—Comparison of the Length, in Centimeters, of Portions of the Left and Right Oviducts, in 2 Chickens with Well-developed Right Oviducts, with Similar Portions of the Left Oviduct* in the Normal Laying Hen

Portion of oviduct	Oviduct	Bird H530A	Bird I1457P	Normal laying hen*
Infundibulum	Left	9.3	7.6	9.0
	Right	8.5	6.0	...
Magnum	Left	28.0	28.7	33.0
	Right	26.0	25.0	...
Isthmus	Left	14.4	14.0	10.0
	Right	13.0	12.2	...
Uterus	Left	10.0	8.5	12.0
	Right	8.5	8.0	...
Vagina	Left	9.0	6.0	12.0
	Right	10.0	6.0	...
Total length	Left	70.7	64.8	76.0
	Right	66.0	57.2	...

*Approximate length according to Jull.[9]

oviducts were observed, the amount of fluid contents ranging from a fraction of a cubic centimeter to 200 or 300 cc. However, because of their extremely common occurrence, they were not regularly recorded in the routine autopsy reports, and accurate data on their frequency and measurements are unavailable.

A representative group of 65 female chickens of various ages were examined and particular attention was given to the occurrence and size of the rudimentary right oviduct. All birds showed some indication of such rudiments. These varied in length from a small 0.5-cm. cloacal stump to a fairly well-developed rudiment 13 cm. long. Vestiges less than 1 cm. in length were observed in 7.7 per cent of the chickens, vestiges between 1 and 5 cm. long in 52.3 per cent, between 5 and 10 cm. in 36.9 per cent, and in 3.1 per cent of the birds the right oviduct was over 10 cm. long. These findings indicate that rudimentary right oviducts are extremely common among the Single Comb White Leghorn chickens at this laboratory.

SUMMARY AND CONCLUSIONS

A well-developed, apparently functional, right oviduct in each of 2 pullets has been described. Measurements of the various portions of the right and left oviducts have been given, together with photographs of the 2 specimens.

One large (1,210 cc.) cystic right oviduct has been reported.

The 3 cases presented occurred in approximately 3,000 autopsies of Single Comb White Leghorn chickens at this laboratory. Percentages of occurrence of rudimentary right oviducts of varying lengths obtained from a group of 65 female chickens of various ages and stages of production, included in the 3,000 autopsies, have been given.

The data presented indicate that rudimentary right oviducts are extremely common and that well-developed, active, right oviducts appear occasionally among the female Single Comb White Leghorn chickens of this laboratory.

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Seasonal Effects on Bovine Fertility

Variations in the number of hours of daylight were found to have a significant effect on the fertility level of cattle in New York State, with winter being the poorest season for all age groups. Young and old cattle showed marked fluctuations in fertility level from season to season, while the level for cattle of middle age was more stable. The study comprised 125,000 cows and 71 bulls bred artificially over a period of six years.

One third of the yearly number of artificial services in New York are carried out in winter, when the fertility level is at its minimum. Therefore, this management practice decreases the overall fertility level. One way to improve this condition would be to breed young cows during early spring and fall, cows of medium age during winter, and old cows in late spring and summer. Because older bulls are less fertile during winter, young bulls probably should be employed most in that season.

It is believed that light influences bovine reproductive functions by its action on the pituitary gland.—*J. Dairy Sci., 30, (Nov., 1947): 817-826.*]

Treatment of Impotent Bulls.—A treatment for impotent bulls recommended by Dr. W. G. Stevenson of Montreal is to inject 1,500 I.U. of gonadotropic hormone from pregnant mare's serum twice a week for six weeks.—*Canad. J. Comp. Med. and Vet Sci., October, 1947.*

Pyrethrum Substitutes. — Di-isopropyl acetamide, di-isobutyl acetamide, and heptyl acetamide are all satisfactory substitutes for pyrethrum or derris (*J. Am. Pharm. A.*, Dec., 1947). Patent rights on these products are assigned to the United States government.

Wing Amputation of Birds in Lieu of Pinioning

W. A. YOUNG, D.V.M.
Chicago, Illinois

A GREAT many citizens as well as zoölogical gardens are embarrassed by the loss of valuable birds, which fly away.

Feather Cutting.—As a boy, I saw my father shear the long feathers on one wing of an old hen to prevent her flying out of the chicken yard. As everyone knows, no doubt, this causes the bird to fly in a circular course, thus preventing it from leaving the enclosure. This method of feather cutting is old but it works, until the feathers grow out again.

Many birds accept catching and handling; however, those that are high strung and which are apt to be expensive, resist catching and restraint when it is necessary to shear the feathers. Therefore, this old method is not too desirable for some species of birds. Of course the feather cutting method necessitates repetition. This method also leaves the bird in a rather unsightly condition for exhibition purposes. The public likes to see full long feathers and not stubbs of quills.

PINIONING

There is much about pinioning that I do not know. Someone, years ago, conceived the idea that one or more of the principal tendons in a bird's wing could be cut or sectioned, thus causing the bird to lose its power of flight in that wing.

Theoretically, it sounds good but from the practical standpoint many bird collections have lost excellent specimens after pinioning, simply because nature regenerated the pinioned tendon sufficiently to enable the bird to fly.

Some of the pinioned victims are found to have a droopy wing. They make poor exhibition specimens and become less valuable because the drooping wing gives the appearance of being broken.

WING AMPUTATION

Actual wing amputation offers another solution to this problem of flight control in birds. I have seen many bird specimens with wings which were amputated by scissors, bolt cutters, pruning shears, and no doubt, jack-knives. A goodly percentage of birds thus treated may eventually recover from the butchery but it is doubtful that they will make satisfactory exhibits. However, such a crude method of surgery should not be considered.

Several years ago, R. Marlin Perkins, director of the Lincoln Park Zoo in Chicago, discussed this question of pinioning, flight control, etc., with me and requested that I amputate some wings. He was opposed to simply chopping off the outer portion of the wing. I agreed with him. If we are to amputate birds' wings, professional surgery should be required.

Through Mr. Perkins' urging, I stumbled upon a technique of wing amputation which has proved successful and quite satisfactory from the standpoint of the birds, the exhibitors, the spectators, and the veterinarians.

It is well to keep in mind that birds should not be put through wing amputation at the time some other disturbing experience is taking place; for example, recently acquired birds probably shipped long distances should not be subjected to the restrictive handling, excitement, and distress of such an operation. To do so would add to the death rate, already too high. I suggest that newly arrived birds be housed for several days, possibly two weeks, before any attempt is made to amputate the wings. This will permit them to recover from the experience of capture and shipment and become accustomed to their new quarters and food, as well as the new people working around them.

The amount of wing to be removed will vary somewhat with the species of birds. Heavy, slow-flying birds can be controlled by removing a smaller portion of the wing than is necessary from the rapid-flying ones.

INSTRUMENTS USED

The instruments I ordinarily use are: a hypodermic syringe, with a supply of 2 per cent (2%) novocaine; a Bard-Parker knife with a No. 10 blade and a spare blade; one straight and one curved blunt-nosed surgical scissors; two straight and two curved Kellys; a needle holder; two curved needles; a supply of chromic catgut, sized according to the bird; 70 per cent alcohol and tincture of iodine; gauze sponges; bone saw; and a Rongeur forceps. Start with sterile instruments, wear surgical gloves and keep the instruments clean with alcohol or nonstaining antiseptic solution.

Presented before the section on general practice, Eighty-fourth Annual Meeting, A.V.M.A., Cincinnati, Ohio, Aug. 18-21, 1947.

Managing director, The Anti-Cruelty Society, Chicago, Ill.

RESTRAINT

If possible, I have running water within arm's reach; my instruments are laid out on a towel or gauze to the right. A strong table or bench stands at right angles to the instrument table, with an assistant seated on the bench, the bird on his lap and against his body, with the bird's back down and toward the holder. The head is held under and behind the assistant's left arm. With larger birds, another attendant controls the head. The assistant holds the upper wing down against the bird's body. The underneath wing is extended to facilitate surgery. An attendant, especially on larger birds, controls the feet and legs with one hand and steadies the underneath wing with the other.

PREPARATION OF SURGICAL AREA

Remove the feathers over an area about 2 in. around and outside of the outer joint in the wing. This can usually be done before the anesthetic is applied. If the feather plucking, particularly the larger wing feathers, causes distress to the bird, the anesthetic should be applied first. Seventy per cent alcohol is used to soak the surgical area. I have used tincture of iodine and alcohol, but feel that alcohol alone is just as good. After the alcohol is applied, inject the novocaine on the upper and lower sides of the wing. One cubic centimeter (½ cc. upper and ½ cc. lower) is usually sufficient for small birds such as ducks, and 2 cc. will take care of almost any size bird, even a pelican.

ANESTHESIA

With a little practice, a 1-in., 20-gauge needle can be inserted through the skin just over the joint. Point the needle toward the body, nearly parallel to the wing. This will permit the novocaine to be placed medially to the joint on both upper and lower surfaces of the wing. The anesthetic takes effect promptly, and in one or two minutes you will be able to operate with little or no distress to the bird. I use a straight or curved Kelly, depending on the contour of the wing, and clamp it over the web of the wing at right angles to the long axis, as close to the bone as possible. This Kelly is set medially to the joint.

SURGICAL PROCEDURE

In poor flying birds, I remove all of the wing, external to the outer wing joint, except for the little appendage on the leading edge. On these birds, I incise the web of tissue between this appendage and the outer segment of the wing, then carry the incision at right angles across the wing, just external to the joint. The tissues can be pushed medially a little bit down the bone, so that the bone can be cut a little shorter than the point of incision in the skin. With the tissues severed and pushed from the bone, use a small bone saw and saw through the bone. The wound is closed with chromic catgut of appropriate size. One or more sutures along the edge of the small appendage should be left long enough so that this portion may be tied close to the wound across the wing. In other words, after the surgery is completely sutured, tie one or more of the appendage sutures to sutures on the main part of the wing. This causes the wing to heal so that the small appendage covers the end of the wing, giving a smooth appearance on the end, nicely covered with feathers when completed, and leaves a presentable bird for exhibition. In fact, these birds may be put on exhibition almost immediately after the operation.

Birds which fly easily or rapidly, and might be able to fly out of the ordinary enclosure, if operated on in this manner, can be satisfactorily controlled simply by removing the small appendage along with the outer segment of the wing. This takes away just a little more power of propulsion from the bird; however, the wing is not quite so presentable until the wing has healed and has grown a new set of feathers to cover the surgical wound.

RISK

The risk from this operation has been very low in my experience. Out of several hundred birds, 1 died from infection. One died from hemorrhage which was caused by fighting with other birds during the night.

AFTER CARE

I think it is well to keep the bird controlled for twenty-four hours after the operation, in order to avoid fights between birds which might open the wound.

In a few cases, involving large birds, it was necessary to use catgut ties to control a bleeding artery. Any hemorrhage of this character will make itself evident within a few minutes after surgery. Ordinarily, as soon as the surgery is completed I remove the Kelly from the wing and the bird is taken to its cage and released.

CONCLUSION

No doubt this technique could be greatly improved, but I offer it, hoping that as a veterinarian, I have given to other members of my profession something that will be useful and helpful. I urge you to make use of it, for the care and treatment of wild animals and birds is almost a virgin field.

DISCUSSION

DR. MILTON J. GEIGER (Croswell, Mich.): Do you perform the operation on both wings or is one sufficient?

DR. YOUNG: Only one. The bird then flies in a circular caurse and cannot escape.

MEMBER: Is the joint involved in the operation?

DR. YOUNG: On some, I have gone through the joint, although I dislike to amputate through a

joint. I use the Rongeur and try to clip off the articular surface so I have bone rather than cartilage in the wound. I think it facilitates healing.

DR. M. A. NORTHRUP (San Francisco, Calif.): I notice you did this under procaine.

DR. YOUNG: Novocaine.

DR. NORTHUP: Chickens are not tolerant to nembutal and ether. How about the wild birds?

DR. YOUNG: The advantage of local anesthesia is that as soon as you are through with the operation, the bird is on his feet and does not flop around. There is almost no picking at the wound. They seem to tolerate it well. A general anesthesia seems unnecessary.

Bandaging Injured Teats and Surgical Treatment of Hard Milkers

I was interested in the article on teat surgery by Dr. F. A. Hall in the April, 1947, issue of the JOURNAL. However, he omitted two important procedures to which I attribute a large degree of success in the teat operations which I perform.

On an injured teat, I always use a bandage consisting of two ordinary milk strainer pads, applied by placing the two cotton surfaces together, thus making gauze surfaces on either side. By placing the end of the teat in the center of the circular pad, I fold the bandage into place and secure it with two pieces of tape each about a foot long passed round and round the teat from the bottom up, and then take the remaining end around the base of the teat above the bandage. The attendant can use a new bandage after each milking, keeping the teat clean and free from foreign matter. The best results can thus be obtained from medication.

The other procedure consists of surgical treatment of those cases where the sphincter is closed by injury and may be accompanied with severe pain or swelling. In most cases, there is considerable infiltration from hemorrhage into the subcutaneous tissue around the sphincter muscle. I have seldom found a case that is injured too badly to operate upon. The results are excellent so long as the quarter is not infected.

The operation consists of cutting off enough of the end of the teat to remove the injured tissue but leaving just enough of the sphincter muscle to prevent the teat from leaking permanently. By examining carefully the extent of the injury, one can determine how much should be removed. In some cases this is nearly half an inch. Restraint consists of a nose lead and "tailing." Using a sharp pair of scissors, preferably Sharpe's removable blade type, I cut the end off, then evert the remaining portion of the sphincter muscle with the thumb and forefinger of the left hand and, with a small pair of curved scissors, remove enough of the sphincter to allow the milk to flow freely. The operation should always be done with the quarter full of milk. When finished, the milk should flow in a gentle stream without milking, or come out with a gush when pressure is applied.

Usually I do not use an anesthetic since procaine, infiltrated into the tissue around the sphincter, causes further swelling. The after care consists of applying the bandage previously described and using sulfathiazole and urea ointment. Never use plugs or tubes. It is seldom necessary to see these cases a second time. Healing takes place in ten days to two weeks. Scar tissue draws the remaining sphincter together so that the teat does not leak.

Of several hundred of the cases thus treated, the recoveries were about 95 per cent, and a lot of good cows were saved from slaughter. On 1 purebred cow, I performed this operation on four teats and the cow is still producing satisfactorily.—*Kenneth E. Lloyd, D.V.M., West Bend, Wis.*

Approach to the Guttural Pouch

Objecting to drainage through Viborg's triangle on the ground that the veins from the ventral border of the parotid gland to the external maxillary vein are exposed to the flow of pus and subject to postoperative periphlebitis, V. K. Chubar, of the Kiev Institute (*Veterinariya, 24,* July, 1947:20-21), made an incision 1 to 1.5 cm. ventromedial to the external maxillary vein, extending from the angle of the mandible 5 to 7 cm. in a caudal direction. The fascia between the vein and the sternohyoideus muscle was incised. The guttural pouch or the retropharyngeal lymph nodes were reached by blunt dissection dorsally in the areolar tissue between the visceral layer of the deep fascia medially, and the parotid fascia on the deep surface of the parotid and mandibular salivary glands laterally. The pouch was entered medial to the external carotid artery. (*See,* W. F. Guard, Operative Surgery Notes, 1936.)—*R. E. Habel.*

Penicillin may mask the true pathologic course of a surgical infection.

Viability of Vibrio Fetus in Petrolatum

B. Q. WARD, B.A., M.A., and A. M. LEE, D.V.M., M.S.
Laramie, Wyoming

THE CULTURAL preservation of *Vibrio fetus*, the organism responsible for many cases of abortion in sheep and sometimes in cattle, has in the past presented many difficulties. Not only is the organism fastidious in its growth requirements, but the transference to new mediums on an average of once every four to five days is advisable if not mandatory. Even with the transference at these intervals, cultures are subject to autolysis at any time. Lyophilized cultures have been maintained for considerable lengths of time, but the process of lyophilization requires certain techniques or equipment not always available in the small laboratory or to the general practitioner. In our attempts to develop a practical method of preservation suitable for the small laboratory, we have met with some success in experiments conducted with heavy mineral oil under varying conditions.

Three actively growing cultures of *V. fetus* (Cambridge ovine strain IV, Montana 2755-Marsh, and Illinois 18-2-Rhoades) were tested for viability in oil under varying conditions. Four plates of each strain were flooded with heavy mineral oil in one experiment. In a second series of tests, two plates of each strain were flooded with oil. The growth was suspended in the oil which was then removed to four sterile tubes. In both experiments, half of the plates or tubes were held at room temperature while half were placed under refrigeration. Plates of blood agar were streaked twice a week from each preparation and the organisms recovered were identified morphologically using the gram stain. Controls were provided by using untreated plate cultures of the organism under study, held at the same temperature as the cultures in oil.

The experimental results obtained are recorded in table 1. It would seem that few appreciable differences can be detected between the viability of cultures held at room temperature and the viability of identical cultures kept under refrigeration. The viability of each strain under all conditions was unsually constant as a rule. From this table it can also be seen that, while much work has yet to be undertaken along these lines, the method of oil preservation would seem to increase the length of the period of

The investigation reported in this paper is in connection with a project of the Wyoming Agricultural Experiment Station and is published by permission of the director.

Instructor and research assistant (Ward) in the Department of Veterinary Science and Bacteriology, University of Wyoming; research pathologist and head of the department (Lee).

Table 1—Oil Preservation of Vibrio Fetus

Average days viable	Cambridge ovine IV				Montana 2755-Marsh				Illinois 18-2-Rhoades			
	Plate R. T.	Plate Ref.	Susp.* R. T.	Susp. Ref.	Plate R. T.	Plate Ref.	Susp. R. T.	Susp. Ref.	Plate R. T.	Plate Ref.	Susp. R. T.	Susp. Ref.
4-21	+	+	+	+	+	+	+	+	+	+	+	+
25	feeble +	feeble +	feeble +	+	+	+	+	+	+	+	+	+
28	—	—	—	—	feeble +	feeble +	feeble +	feeble +	+	+	+	+
30	—	feeble +	—	—	—	feeble +	—	—	+	+	+	+
33	—	—	—	—	—	—	—	—	feeble +	feeble +	feeble +	feeble +
35	—	—	—	—	—	—	—	—	—	—	—	—
Controls	Plates R. T.		Plates Ref.		Plates R. T.		Plates Ref.		Plates R. T.		Plates Ref.	
Average days viable	6		5		8		7		10		7	

*Susp. = Suspension. R. T. = Room temperature. Ref. = Refrigeration.

viability from, roughly, one week to approximately one month. This increase, plus the simplicity of the technique, might warrant its further consideration as a convenient method of preserving cultures without lyophilization or frequent transfer.

Sterility Treatment and Hormonal Mastitis

Several days after treatment with gonadotropic hormone from pregnant mare's serum to correct sterility, 2 cows developed noninfective mastitis in all quarters accompanied by bilateral oöphoritis. In one of these cases, the trouble subsided in a few days without treatment, but milk secretion was permanently lowered. The other recovered only after receiving a 125-mg. injection of testosterone propionate.

These cases were described by Durrell (*Canad, J. Comp. Med. and Vet. Sci., Oct.,* 1947) incident to a study of hormone therapy in bovine sterility. On the positive side of the study, gonadotropic hormone from pregnant mare's serum and the chorionic gonadotropin from human pregnancy serum were found to be of definite benefit in treating delayed conception and cystic ovarian degeneration, and synthetic androgen (testosterone) gave good results in impotent bulls.

In another report on reproductive disorders in the Canadian journal, Stevenson said that among animals given a single injection of the human pregnacy serum hormone to correct nymphomania and cystic ovaries, about 60 per cent can be expected to return to normal and conceive. The recommended dosage is 1,000 I.U. intravenously or 10,000 I.U. intramuscularly. For hard-to-settle cows, a 1,500-I.U. injection of pregnant mare's serum hormone on the sixteenth to eighteenth day of the estrous cycle can be expected to induce conception in 70 to 80 per cent of the cases.

Early Mating.—A litter recently registered by the American Kennel Club was whelped by a Dachshund bitch (Fretzel Trushay—H24482) mated at the age of 4 months, 14 days. "The early mating, in our opinion, is so unusual as to be possibly of scientific value to veterinarians," wrote Mr. G. Van Nostrand, treasurer of the American Kennel Club.

The Science and the Art of Anesthesia

Up to the present time, anesthesia has been rich in techniques but nowhere as rich as the techniques of surgery. The main preoccupation has been with tools and their use. Expertness can be achieved by men of ordinary skill and intelligence. The pursuit of skill is the essence of ordinary teaching. Anesthesia has not shared in the advancements of the medical specialties in recent years, having merely followed the traditional pattern in ignorance of the anesthetic process. Summed up, an anesthetist should not be permitted to become a specialist without the broad clinical training in medicine required of other specialists. —*Henry K. Beecher, M.D., "The Specialty of Anesthesia, Ann. Surg. 126, (Oct. 1947): 486-499.*

Topical Sulfonamides Discredited

Military experiences during the war and the consensus of 36 prominent physicians prompted the AMA Council on Pharmacy and Chemistry to delete approval of topical sulfonamides in the 1947 edition of New and Nonofficial Remedies (N.N.R.). Extensive trials of local sulfonamide therapy in wound infections showed that such treatment delayed healing and was otherwise deleterious; moreover, topical sulfonamides proved ineffective as a means of wound sterilization (*J. Am. M.A.*, Sept. 20, 1947).

The 1947 N.N.R. sums up the Council's decision in this way:

> Experience gained in World War II seems to indicate that the use of crystalline sulfonamides as topical agents was not very successful in the management of wound infection or in treatment of infections of the skin or mucous membrane. The routine use of sulfonamides as topical applications in wounds, burns, and in superficial infections is, therefore, to be discouraged.

The Council cited three potential hazards attending the use of "inconsequential [topical sulfonamide] preparations": (1) the substitution of an ineffective remedy for one which might be of value, (2) the possibility, now widely recognized, of permitting the development of sulfonamide-resistant organisms, and (3) the development of cutaneous sensitization and thus preventing the use of these drugs in serious conditions for which they are known to be effective.

CLINICAL DATA

Clinical Notes

Protamine sulfate and toluidine blue are both apparently capable of binding heparin and rendering it biologically inactive.—*J.Am.M.A., Dec. 27, 1947.*

BHC for Ear Ticks.—In U.S. BAI field tests, a mixture of 3 to 5 per cent of BHC (benzene hexachloride) in pine oil not only killed all ear ticks in one application, but also kept treated ears tick-free for at least seventeen days.—*USDA Clipsheet.*

Anthelmintic Toxicity Avoided—Toxicity resulting from the continued use of oil of chenopodium and carbon tetrachloride (in human patients) was avoided by adding phenolphthalein to these compounds.—*Abst., J. Am. Pharm. A., Oct., 1947.*

Movable Cages for Small Animals.—I prefer metal cages on rollers to the permanent, nonmovable cages generally used for boarding small animals. Disinfection is accomplished with liquid antiseptics, supplemented by exposure of the cages to sunlight.—*A. A. Barry, D.V.M., Revere, Mass.*

Thephorin, New Antihistamine Agent.—Thephorin, a polycyclic amine, is an antagonist of histamine that is believed to offer advantages over other antihistamine agents. Its principal virtues, as observed by Reynolds and Horton (*Proc. Staff Meet. Mayo Clin., 22,* Dec. 10, 1947), are effectiveness in small dosages and uniform absence of toxic manifestations.

Calcium Needs of Chickens.—Heuser of Cornell University estimates that the calcium intake of chicks probably should not exceed 1 per cent of the ration, and of hens, 3 per cent. He told the Cornell nutrition conference for feed manufacturers (Syracuse, N. Y., Nov., 1947) that too much calcium in the ration may depress chick growth and lower egg production.

Antagonist for ANTU.—Acute ANTU poisoning results in hyperglycemia. In studies made by DuBois and others, insulin and ergotamine antagonized the hyperglycemic effect of 10 mg./kg. of ANTU.—*Abst., J. Am. Pharm. A., Oct., 1947.*

High-Sugar Corn Plant.—A new type of corn plant developed at the Connecticut experiment station contains over 11 per cent of sugar in the stalk, or approximately as much as sugar cane. Its value as fodder and the feasibility of manufacturing sugar from it have not yet been investigated.—*Science News Letter, Nov. 1947.*

Streptomycin-Sulfadiazine Therapy of Brucellosis.—A strikingly severe case of human brucellosis, in hospital confinement for several months, failed to respond to either streptomycin or sulfadiazine alone, but simultaneous administrations of the two drugs resulted in a "prompt clinical and bacteriologic cure." There was no sign of relapse in a post-treatment period of 17 months.—*Eisele and McCullough, J.Am. M.A., Dec. 20, 1947.*

Para-aminosalicylic Acid in Tuberculosis.—Feldman, Karlson, and Hinshaw, of the Mayo Foundation, found that para-aminosalicylic acid (PAS) had a favorable effect on the progress of established cases of experimental tuberculosis in guinea pigs. Though PAS was fed in fairly large amounts (4 per cent of the ration), there were no signs of toxicity. The authors believe that a combination of PAS and streptomycin may offer an improved means of treating tuberculosis.—*Proc. Staff Meet. Mayo Clin., Oct. 15, 1947.*

Corrigendum.—The following corrections should be made in the paper on Newcastle virus by Dr. H. E. Moses published in the February, 1948, JOURNAL: p. 127, line 16, "structure" should be destruction; lines 34 and 35, "hydrochloride" should be hypochlorite; line 54, "much" should be deleted.

Vaccination Against Hog Cholera with Crystal Violet Vaccine by the Intradermic Route

MARIO D'APICE, Chief of the Department of Epizoötic Diseases; A. M. PENHA, Director of the Division of Animal Pathology; and R. CURY, M.V.D.

São Paulo, Brazil

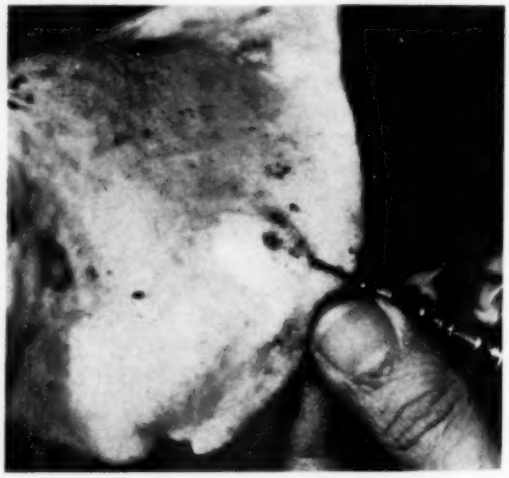
IN THE State of São Paulo (Brazil), preliminary studies on hog cholera prevention were made by Dr. A. M. Penha, of the Instituto Biológico. His work was the initial landmark for those who today proceed with the research.



Pig tied by the cachimbo and inoculated by the intradermic route on the inferior external edge of the ear.

Through experiments and observations made in the field during the outbreaks of hog cholera in São Paulo and São Carlos in 1939 and 1942, respectively, we were able to check the efficacy of the various methods applied against this disease, having recognized and chosen the crystal violet vaccine as the most practical, economical, and usable method. However, in order to increase the efficacy of this vaccine and start its regular production, we modified its original composition, obtaining an inexpensive, safe, and valuable method of easy handling for complete control of the disease. The results of our experiments with this type of crystal violet vaccine have been cited in various publications.[3-9]

Although encouraged by the successful use of more than 500,000 doses, we did not discontinue our experimental studies on the matter. We hoped to obtain a vaccine which, apart from being highly active against hog cholera, could be produced in quantities sufficient to fill all needs. We, therefore, set up a system of experiments to find a new procedure in the campaign against hog cholera. We tried to test the influence on concentrated virulent blood in the total volume of the vaccine, by immunizing with a minimum dose given intradermally. Next we tested the intradermic route as to antigenic value, without trying to determine the negative vaccination phase.



Detail of the inoculation by the intradermic route on external edge of the ear, showing blister formation.

VACCINE PREPARATION

Three vaccine compositions were prepared under a procedure rigorously established,[5] and varying only in the total volume of virulent blood. These formulae are referred to as I, II, and III.

Vaccines so prepared were maintained in the incubator for only seven days, instead of the usual fourteen, because Doyle[2] and Cole[1] proved that the incubated virus was

From the Biological Institute of São Paulo, Brazil.

inactiviated after five and three days, respectively.

After confirming their aërobic and anaërobic sterility, and safety when inoculated in guinea pigs, these vaccines were

Formulae I, II, III

	I	II	III
Virulent blood, defibrinated	300 cc.	450 cc.	400 cc.
Glycerin—c.p.	150 cc.	90 cc.	100 cc.
Distilled water	150 cc.	.....	40 cc.
Carbolic acid—c.p.	0.6 cc.	0.6 cc.	0.6 cc.
Crystal violet solution (0.5%)	60 cc.	60 cc.	60 cc.

submitted to protection test. On various protection tests, we have always used Edelschwein and Duroc-Jersey pigs of our own breeding from our "Fazenda Experimental de Mato Dentro," at Campinas (State of São Paulo, Brazil). They weighed 60 lb. and were highly sensitive to infection.

One person is able to restrain an animal, but for suckling-pigs, it is advisable to have the tie shortened to make the twisting action easier.

The syringe employed is of the Record type, with a capacity of 3 to 5 cc., and is provided with a 2-gauge needle. The first needle, a thinner one, should be 0.5 to 0.6 mm. in thickness and 7 mm. long. It is introduced into the derma. The second needle, a thinner one, should be 0.5 to 0.6 mm. in thickness and 7 mm. long, in order to secure a greater needle resistance.

The inoculation is made by the intradermic route through the outside part of the ear. Any part of the inferior external edge is preferable as, according to histology, this portion of the ear is constituted of skin and cartilage, and has practically no subcutaneous tissue. This makes it easier for the less skilled.

TABLE 1—Reaction of Pigs to Experimental Infection Following 1-, 2-, and 3-cc. Muscular Injections of the Three Crystal Violet Vaccines

Vaccine I				Vaccine II				Vaccine III			
Dose	No. pigs	Result* reacted	died†	Dose	No. pigs	Result reacted	died	Dose	No. pigs	Result reacted	died
1 cc.	3	1	2	1 cc.	3	2	1	1 cc.	3	3	..
2 cc.	3	1	2	2 cc.	3	3	..	2 cc.	3	3	..
3 cc.	3	3	..	3 cc.	3	3	..	3 cc.	3	3	..
Control‡	1	..	1	Control	1	..	1	Control	1	..	1

*The virus (2 cc.) was inoculated twenty-one days after vaccination.
†Dead animals showed signs of hog cholera infection.
‡Control pigs died between ten to thirteen days after virus inoculation.

METHOD OF ADMINISTRATION

The Intradermic route is as follows: The animal is tied with a rope or with a leather strap which has a wooden handle resembling the *cachimbo* used to tie horses. A loop is applied to the upper jaw, behind the canine teeth. When twisted, it fastens the jaw and the animal reacts by trying to move back. This causes it to remain immobile, thereby allowing the inoculation of the vaccine at the border of the ear, in a safe and quick manner.

We are still proceeding with new experiments, hoping to obtain a simpler method of intradermic vaccination.

The muscular route consists of inoculation on the medial part of the thigh, deep into the muscle.

EXPERIMENTAL TESTS

A lot of 40 pigs was divided into four groups of 10 animals each and placed in four isolated pens.

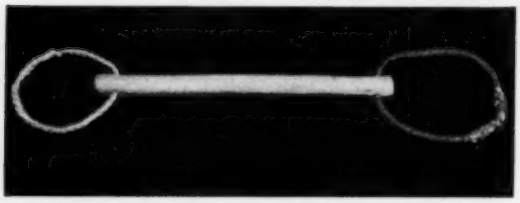
The three types of vaccines were inoculated

TABLE 2—Reaction of Pigs to Experimental Infection, Using Different Types of Vaccines by Intradermic Route in a 1-cc. Dose

Vaccine I				Vaccine II				Vaccine III			
	No. pigs	Result* reacted	died†		No. pigs	Result reacted	died		No. pigs	Result reacted	died
	3	3	..		3	3	..		3	3	..
Control‡	1	..	1	Control	1	..	1	Control	1	..	1

*The virus (2 cc.) was inoculated twenty-one days after vaccination.
†All dead pigs showed signs of hog cholera.
‡Control pigs died between ten to thirteen days after inoculation.

in 1-, 2-, and 3-cc. amounts, by the muscular route in 3 pigs in each of three lots. Each pen contained 9 inoculated pigs, 1 being left untreated as a control. The fourth lot was given by the intradermic route—1-cc. doses of vaccines I, II, and III—3 pigs always receiving the same injection; 1 being kept as a control. For perfect identification, all pigs were conveniently numbered. After twenty-one days, they were inoculated with 2 cc. of virus (triturated spleen and virulent blood), with the results shown in table 1.



Cachimbo, used to tie pigs. One side is for large pigs and the other for suckling pigs.

The analysis of table 1 shows that the immunity conferred by vaccine III is regular, *i.e.*, all pigs vaccinated with various doses reacted. Vaccines I and II, on the contrary, conferred irregular immunity against experimental inoculation of virus.

Where complete protection against 3- and 5-cc. doses given by the muscular route are demanded, we believe that, in the near future, it will be possible to reduce the vaccination dose of 5 cc.

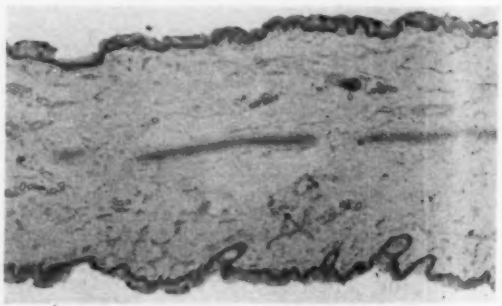
As far as results obtained through intradermic vaccination are concerned (*see* table 2), they are satisfactory, whatever the vaccine used. This result did not surprise us, as some months ago we submitted to intradermic protection test, a lot of crystal violet vaccines No. 312-313. It reacted when inoculated into 3 pigs. Unfortunately, we were unable to obtain the same results reported by Cole,[1] who by the intradermic route vaccines on 26 animals reported that after inoculations of virus, 12 pigs remained nomal, 6 showed slight reactions, 6 reacted severely, and 2 died.

The possibility of lessening the vaccinating dose and particularly the hope of using the intradermic route vaccines, indicated that it would be interesting to determine the negative phase of the vaccination period, since the relatively long period of twenty-one days needed to establish immunity was one of the evident disadvantages of the vaccine. For this purpose, 24 pigs from our farm, in the same conditions as previously outlined, were divided into three groups and placed in three pens.

The vaccines, corresponding to compositions I to III, were given to 6 pigs by the intradermic route in a 1-cc. dose, 2 being left as untreated controls. All pigs were conveniently numbered.

After five, ten, and fifteen days, we proceeded with the inoculation of 2 cc. of virus (triturated spleen and virulent blood) on each lot of 8 pigs, 6 vaccinated and 2 controls. The results obtained are shown in table 3.

These results show, in general, that the negative phase of the vaccination period of the vaccines given through the intradermic route is slightly inferior to that given in the usual muscular route. At five days, there was no protection, after ten days, it was equivalent to 50 per cent, and after fifteen days, the protection was complete. Therefore, it appears that the negative phase of the vaccination period by the intradermic route must be ten to fifteen days, subject to new experiments to confirm these results.



Histologic section of the inferior external edge of the pig ear.

The second series of experiments was started to determine if the vaccinating dose by the intradermic route could be diminished.

TABLE 3—Test of Negative Vaccination Phase by Intradermic Route, Using Different Types of Vaccines

	Vaccine I							Vaccine II						
		Result of virus inoculation (days)							Result of virus inoculation (days)					
	No.	5		10		15		No.	5		10		15	
	pigs	R	D	R	D	R	D	pigs	R	D	R	D	R	D
	6	..	3	1	2	3	..	6	..	3	2	1	3	..
Control	2	..	1	..	1	..	1	Control 2	..	1	..	1	..	1

All dead pigs showed signs of hog cholera. R=reacted. D=died. Control pigs died between nine to sixteen days after virus inoculation.

We require that the crystal violet vaccine be tested and found experimentally efficient with half the dose demanded in practical use. Thus, in three lots of vaccines prepared in accordance with composition III, making a total of

TABLE 4—Comparative Test, Between Muscular and Intradermic Routes in a 3 cc., 0.5 cc., and 1 cc. Respectively, With 3 Batches of Crystal Violet Vaccine

Vaccines (no.)		No. pigs	Muscular route 3 cc.		Intradermic route 0.5 cc.		1 cc.	
			R	D	R	D	R	D
356		9	2/2	0	3/3	0	3/3	0
	Control	1						
368		9	3/3	0	3/3	0	3/3	0
370		9						
	Control	1	3/3	0	2/3*	1	3/3	0

*Died with pneumonia. R=reacted. D=died. Controls died between eleven to thirteen days, showing hog-cholera lesions.

107,400 cc., we established the following test protection criterion: each lot was given to 9 pigs; 3 were vaccinated with 3 cc. by the muscular route; 3 others were given 1 cc. by the intradermic route; while the last 3 were given 0.5 cc. by the intradermic route; 1 was kept as a control. The results are shown in table 4.

These results show that the immunity is regular either with a 3-cc. dose given by the muscular route, or 0.5 or 1 cc. by the intradermic route, proving the great efficacy of the intradermic route.

These experiments are of real value, both from the technical and practical points of view. With the previous method, each pig would produce a maximum of 200 to 250 doses whereas now we are able to obtain from 1,000 to 1,500 doses, which permits an economical large-scale production of vaccines, and allows a more complete control of hog cholera.

As a practical illustration of the use of the crystal violet vaccine by the intradermic route, we produced in four months about 300,000 doses, which proved the efficacy of the new method at the time when the outbreak of hog cholera was spreading rapidly in the State of São Paulo.

New experiments are being carried out which may reduce the immunity period.

SUMMARY

In order to increase the efficacy of crystal violet vaccine in a practical campaign against hog cholera, we conducted a series of experiments using three different compositions of this vaccine in different doses, and by the intramuscular and intradermic routes.

The results obtained in the first experiments may be summarized as follows:

1) Of three blood concentrations tests, the best one (III) corresponds to the following composition of the vaccine:

Defibrinated virus blood	400	cc.
Glycerin—c.p.	100	cc.
Distilled Water	40	cc.
Carbolic acid—c.p.	0.6	cc.
Crystal violet, 0.5% solution	60	cc.

2) The vaccine may be left in the incubator at 37 C. for only seven days, instead of fourteen days as required before, without impairment of its immunologic activity.

3) In intramuscular doses of 1 cc., 2 cc., and 3 cc. this vaccine (III) protected pigs efficiently against 2 cc. of hog cholera virus inoculated twenty-one days later.

4) There was a certain amount of variability with regard to the protection given by each of the three vaccines.

5) The intradermic vaccination of a 1-cc. dose always gave complete protection against 2 cc. of hog cholera virus.

6) Contrary to expectation, the intradermic route did not significantly shorten the period required for the appearance of immunity which, for the intramuscular route, continues to lie between ten and fifteen days.

7) The intradermic vaccination of 0.5-cc. dose with three batches of crystal violet vaccine, referred to as III, always gave complete protection against 2 cc. of hog cholera virus.

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Examining a Dog's Digestive Tract

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THE privilege of presenting a paper on this subject is very much appreciated. Observations over many years have led me to believe this is a neglected field in many veterinary establishments.

The dog's digestive tract, although short compared to other animals', commonly is involved, directly or indirectly, in a large part of the dog's disease conditions. Its complete examination should never be neglected.

Starting from the front, we examine the mucous membranes of the lips, mouth, and throat, depressing the tongue and viewing the tonsils and pharynx, including the esophageal opening. The mucous membrane gives a fair understanding of how sick the dog is and also a practical evaluation of the general character of the blood stream. Proceeding down the digestive tube, if there is any question of the animal's ability to swallow, or a possible obstruction is suspected, a stomach tube inserted in the center of the mouth, with the mouth then held shut, can be easily slipped down the esophagus into the stomach. A fluoroscope might even be used to assist in a diagnosis if necessary. The odor from the breath and the condition of the teeth should be noted.

Examination of the midriff and abdominal region is the next procedure. This is accomplished by a steady, slow, but firm, palpation with the thumb and fingers across the abdominal region. The full colon or empty intestines are readily recognized in all except short coupled, fat, or pregnant dogs. A full stomach, enlarged liver, and other organ palpation requires patience and practice to interpret accurately. The findings will be directly in proportion to the operator's ability to train his fingertips. Excessive sensitivity during the abdominal palpation should be noted.

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The next step, and in our estimation the most revealing, is the examination of the intestinal contents. This is done by means of an enema. Among the enemas most commonly used are plain water, soapy water, glycerin, mineral oil, sodium bicarbonate solutions, flavine, and other antiseptic solutions. They may also be classified by temperature or by the distance inserted into the colon. There is a food enema of milk and eggs, barley water, and soup, used as a rectal injection. Drug medication by enema has a very limited use in veterinary medicine. A good bowel movement is perhaps the most underrated therapeutic agent in medicine.

The technique of giving an enema is known to all veterinarians. It should include emptying the anal glands. The necessity for this operation is apparent when one realizes that anal glands full of pus, wax, or putrid secretion are sensitive and tend to block the bowel movement. Swollen anal glands, besides being a source of irritation and even acute pain to the dog, are a primary cause of constipation and painful defecation. The average dog brought to a veterinary hospital needs an enema for the following important reasons: First, many of them are decidedly constipated as judged by the history of frequent vomiting, difficult defecation, and symptoms of mild toxemia. The feces are hard, almost concretive. An enema brings immediate relief to such a case and is superior to a purgative. In large cities the percentage of cases of constipation is less than in towns and rural sections. City dogs are generally subject to more controlled feeding. Second, where the patient is not constipated, the information gained by the veterinarian from the enema is exceedingly valuable; often surprising and of a nature not obtainable in other ways.

The feces from the enema should be examined for color. Is it black, red, orange, clay, white, or another color? Is this color due to a drug administered or the type of feeding? Bismuth subnitrate in large doses causes feces to appear black; so does sul-

fur. Horse flesh also makes black stools. Phenolphthalein makes them pink. Blood may be responsible for a red stool; so may undigested meat. Lack of bile is the common cause for a clay color. Orange feces are suggestive of leptospirosis. Large bone consumption tends to make the feces white.

The consistency of fecal masses should be noted. Are they sticky, pasty, thin and liquid, or dry, granular, and hard? The interpretation of the meaning of the consistency should check with the other findings. The odor should be considered. Is it putrid? Is the so-colled "distemper feces" odor recognizable? Teniasis, if present, can be recognized by its characteristic odor or by the presence of segments. Check the chemical reaction for acidity or alkalinity if advisable. The efficiency with which the food is being digested is apparent in the character of the feces. Note if hair is present in the fecal deposit, or undigested peanuts, seeds, string, or other foreign material. Note if there is a high gravel content. Valuable clues and much definite information will be apparent to the naked eye. It may be advisable to wash the digestive tract clear through. This would be contraindicated if marked enteritis or dyspnea were present, but otherwise a properly performed gastric lavage has a stimulating after effect though there is a depression like seasickness at the time of washing and before emesis takes place. It has not been found detrimental in our hands even when used daily for two weeks. The average time required on 100 cases was five and a half minutes and the findings were gratifying and surprising. Using this method with medicaments represents our most effective tapeworm and whipworm treatment.

Microscopic examination of the feces should be routine on all cases. The unsuspected presence of coccidia, tapeworms, hookworms, roundworms and whipworms can destroy the chances for recovery from an expert operation or cause a routine case to "go to pieces." Sometimes the microscopic examination will show Balantidium, demodectic mange mites, or other interesting parasites. A complete fecal examination affords much valuable information to him who will exert the effort to obtain it. It requires but little time and apparatus and helps to eliminate a lot of guess work, making diagnosis more accurate and therapeutic measures more intelligent and effective.

Chloromycetin, New Antibiotic Agent

Chloromycetin, from a mold isolated at Yale University from a soil sample collected near Caracas, Venezuela (*Science, 106,* Oct. 31, 1947:417), appears to have a wide range of chemotherapeutic activity against many distressing infections of man and animals. From *in vitro* and *in vivo* indications, it may become a valuable antibiotic weapon against certain rickettsial and virus diseases. In addition, it is promising *in vitro* against species of Bacillus, Staphylococcus, Streptococcus, Salmonella, Shigella, Proteus, and Klebsiella, as well as *Mycobacterium tuberculosis* var. *hominis,* and *Brucella abortus.*

It is a neutral compound, unique in that it contains both nitrogen and nonionic chlorine, and has a high degree of stability in solution. Other virtues observed (Smadel and Jackson, *ibid.*: 418) were low toxicity, absorption from the intestinal tract, and effectiveness when given relatively late in the course of illness.

The actinomycete that produces this compound is closely related to, and possibly identical with, *Streptomyces lavendulae,* which produces streptothricin (Carter, *et al., Science, 107,* Jan. 30, 1948: 113). Following initial reports of the discovery of chloromycetin, University of Illinois workers (Carter *et al.*) announced they had obtained an apparently identical antibiotic agent from an actinomycete isolated from compost soil on the horticultural farm of the Illinois experiment station.

The Army Medical Department plans to conduct an extensive test beginning this spring on the efficacy of chloromycetin against scrub typhus (rickettsial tsutsugamushi disease) in the Malay States, where the disease is causing high mortality. According to an announcement from the Surgeon General's Office (Jan. 29, 1948), the drug gave encouraging results against both typhus and scrub typhus in laboratory studies at the Army Medical Center. However, it remains to be seen whether the same degree of efficiency will be exhibited under field conditions.

Average yellow corn usually contains no more and often less carotene than a low grade hay.

Inclusion Bodies, with Special Application to Clinical Diagnosis of Canine Distemper

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Columbus, Ohio

CELL inclusion bodies have been demonstrated in many of the diseases caused by viruses. Probably the first to be recognized was the Negri body of rabies. The discovery of nerve cell inclusion bodies of rabies by Negri[1] in 1903 has made it possible to make a quick and accurate diagnosis of rabies. There is worldwide unanimity on the specificity of the Negri body that occurs as an eosinophilic inclusion in the neurons of animals which died of rabies.

Prior to Negri's discovery, laboratory diagnosis of rabies was made largely by examination of ganglia and other nerve tissue for the presence of perivascular infiltrations. This lesion is not specific for rabies as it occurs in other infections of nerve tissue.

Small, cytoplasmic eosinophilic inclusions were found by Lentz[2] in 1907 in the nerve cells of brains from dogs which had shown distemper with nervous manifestations. A detailed description of his findings was published in 1908, the work being confirmed in the same year by Standfuss.[3] Since then, numerous investigators have demonstrated inclusion bodies of canine distemper in cells derived from all three types of embryonic tissue.

Mature dogs, and those well nourished and in good body condition, show a fever in five to six days after exposure to distemper virus, followed by recession of the temperature and recovery in many cases. Puppies and parasitized or undernourished dogs develop complications involving particularly the digestive tract and respiratory and nervous systems. The involvement of these various systems has been responsible for erroneously classifying the disease in forms rather than complications involving these systems.

The symptoms may be moderate, or very severe with acute termination or prolonged illness. Thus, age, state of body condition, dietary, and parasitism are factors which should be considered in making a prognosis.

For several years, routine examinations of epithelium from the urinary bladder, bronchi, and intestine for cell inclusions of distemper have been made following necropsy on dogs. This procedure has been practiced in order to definitely confirm the clinical diagnosis in all cases where distemper was suspected. In numerous cases where distemper was not strongly suspected clinically, a positive diagnosis of distemper was made at autopsy by demonstration of inclusion bodies in these tissues.

More recently, examinations of conjunctival and tongue scrapings have been made from dogs with distemper and stained for the presence of inclusion bodies in these tissues. The consistent finding of inclusion bodies in the tongue and conjunctival epithelium, which are readily accessible in the living animal, permits the application of this method to the clinical diagnosis of canine distemper.

Although several staining methods have been employed to demonstrate inclusion bodies in canine distemper, the ease and rapidity of hematoxylin and eosin staining has made it valuable for routine use. The technique is as follows:

1) Make scrapings from the tongue or conjunctiva and spread thinly on a glass slide.

2) Dry five to ten minutes; fix in methyl alcohol one minute; rinse in water.

3) Stain with Delafield's hematoxylin five minutes; rinse in water.

4) Destain with HCl (0.2%) two or three minutes or until color is reddish blue; rinse in water.

5) Stain with alcoholic eosin (0.8% eosin in 70% alcohol) for three to five minutes. Results are improved if 4 drops of glacial acetic acid are added to 100 cc. of eosin solution. Rinse in water, blot, and examine under the oil immersion objective.

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From the Department of Veterinary Pathology, College of Veterinary Medicine, Ohio State University, Columbus.

Distemper inclusion bodies appear homogeneous and stain bright red in contrast to the blue nuclei and light pink cytoplasm. These inclusions usually occur in the cytoplasm, but some are found in the nuclei of epithelial cells. They are round or oval and are characterized by a sharply defined outline varying in size from very minute to bodies 10 μ in diameter.

An early and accurate diagnosis is imperative for effective control of distemper. Since neither the clinical nor pathologic picture is adequate for the diagnosis of many cases, it was deemed advisable to investigate the application of the inclusion body method to clinical cases. For this purpose scrapings of cells were made from the conjunctiva or tongue of dogs artificially and from others naturally exposed to distemper.

Inclusion bodies were demonstrated in the epithelial cells as early as five days after the appearance of symptoms. Seldom were cell inclusions found later than three weeks after the symptoms occurred. We have been unable to find inclusion bodies in transitional epithelium of the urinary bladders six days after inoculation of puppies with distemper virus used in commercial vaccine production.

CONCLUSIONS

A method for making a positive diagnosis of canine distemper in the living animal by demonstration of inclusion bodies in the conjunctival and oral epithelial cells has been described.

The clinical application of this procedure allows detection of obscure or atypical canine distemper.

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The number of sheep in Australia declined from 125,000,000 to 95,000,000 during 1942-1945 on account of drought.

Ergotamine Tartrate

Ergotamine tartrate, active vasoconstrictor, mentioned casually in human pharmacology and current literature as a remedy for pruritus, remains to be tried in veterinary practice. Quitman's reference to the use of ergot in horses habitually afflicted with pruritus of the tail—tail rubbers—and in lesionless eczema of long-haired dogs did not seem to establish a place for it in the veterinarian's pharmacy.

While both Milks and Hoare list ergotamine among the derivatives of ergot, neither the uses nor the dosage are discussed. The human dose (*Brit. M. J.*, Aug. 16, 1947) is 0.25 mg. daily for four days, to be discontinued in the case of ill effects. Cold extremities can lead to gangrene through excessive vasoconstriction: 1 mg. three times a day was fatal to a human patient.

The thought is that regulated doses of ergotamine tartrate might have a place in canine medicine.

Citrinin

Add citrinin to the growing list of antibiotic agents. From China (*Science*, Sept. 26, 1947) comes a report that gram-positive bacteria are more susceptible to it than gram-negative ones. An interesting fact is that apparently it significantly sensitized organisms to its action. For example, untreated *Staphylococcus aureus* required 0.4 mg. per cubic centimeter of citrinin for complete inhibition at first, but after ten treatments with the drug over a ten-day period, 0.05 mg. was completely inhibitory. The citrinin used in the Chinese experiments was isolated from the culture medium of *Penicillium citrinum* Thom.

No Temporizing with F-and-M. — Discounting the potentiality of foot-and-mouth disease anywhere at any time is not the voice of livestock sanitary science and police. Attempts to reduce it to the level of a mere nuisance is wishful and unsound. Though the death losses are low, the cost of feeding and treating the sick runs into staggering figures and says F. B. Ogilvie, of the American Delhi Command Area (India) in the *Journal of Heredity:* "Often foot-and-mouth disease ruins the productive life of a cow."

Multiple Cisternal Polyps of the Bovine Mammary Gland

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NEOPLASTIC processes of the mammary gland of the domesticated bovine animal are rare. Feldman,[1] in a comprehensive survey of the literature, found three reports of primary carcinoma of the glandular tissue of the udder. He reports the more common occurrence of neoplasms involving the skin of the udder; however, these are not primary neoplasms of the parenchyma of the mammary gland.

The United States Department of Agriculture reports that of 13,000,000 udders subjected to routine inspection, no neoplastic growths were found.[2]

Because of the apparent rarity of neoplastic growths of the bovine mammary gland, it seems of value to report the following case as an item of general interest related to the distribution of neoplasms in animals.

REPORT OF CASE

The cow was a 9-year-old Holstein-Friesian and had demonstrated well above average milk and butter fat production. She had produced 4 calves, the last lactation terminating some eighteen months before slaughter. She was slaughtered in April, 1945, under government inspection. The carcass was in excellent condition, and all visceral organs were normal.

Only one of the four quarters of the udder showed the neoplastic process with which this report is concerned. Approximately 20 tumors of varying sizes were found on the surface of the gland cistern and at the orifices of the large collecting ducts entering the cistern. The smaller tumors were approximately 3 mm. in height. The larger ones were 2 to 3 cm. in height and grew as multilobular, club-shaped projections from the internal wall of the cistern. The surfaces of all tumors showed engorged blood vessels. Two spherical tissue masses, approximately 1.5 cm. in diameter, were found free in the residual secretion of the involved quarter.

The microscopic architecture of the cistern wall and the tumors was studied from serial sections, which were stained with hematoxylin and eosin or by the trichrome method of Pollack.[3] The bulk of the tumors was composed of fibrous connective tissue with an accompanying vascular supply. Mononuclear inflammatory cells were scattered throughout the substance of the tumors. The density of the fibrous tissue increased from the periphery inward. Rudimentary connective tissue fibers were seen beneath the surface epithelium. The arrangement of the connective tissue mass was often asymmetric, suggesting more rapid growth at certain points. The asymmetric growth resulted in a variety of bizarre shapes, as well as the frequent occurrence of secondary knots of tissue growing from the major masses.

Blood vessels occupied a central position in the neoplasms. These were often compressed by the very dense surrounding tissue. Necrosis and calcification of the walls of the arteries and of the periarterial tissue was observed in some of the tumors. Smaller vessels radiated outward in a cart wheel fashion from the central areas. The tissue directly beneath the epithelium was rich in capillaries.

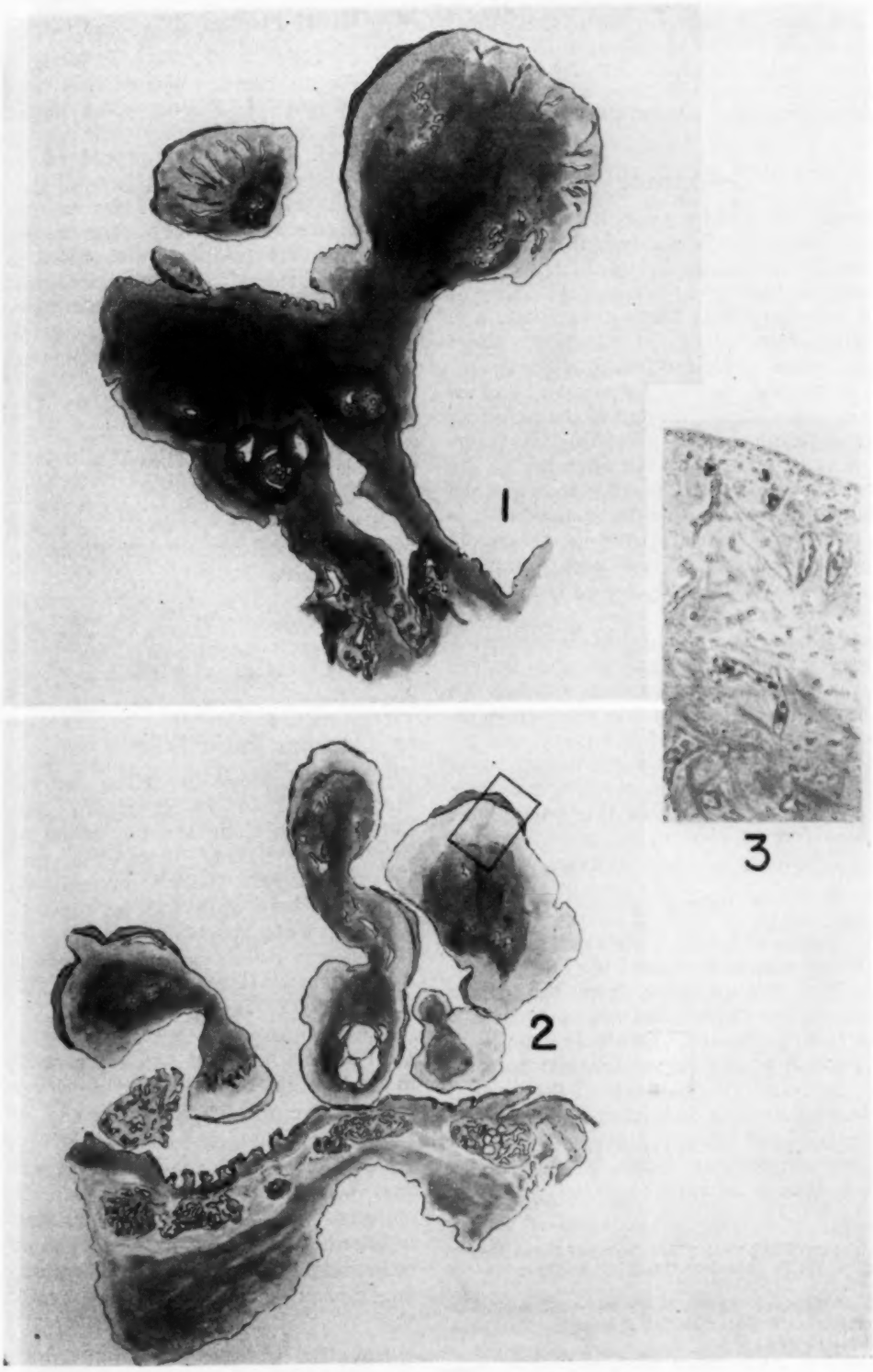
The stalks of the neoplasms showed a histologic structure consistent with that of the bulbous ends. The connective tissue of the central axis of the stalks was dense, but that portion beneath the epithelium was more loosely arranged. The tissues of the tumors originated in the tunica propria of the cistern wall. Accessory glandular tissue and foci of lymphocytes of the normal tunica propria were incorporated into the substance of the neoplasms. The lining epithelium of the cistern covered the tumors. Patches of squamous metaplasia produced irregular thickenings of the epithelial surfaces.

LEGENDS FOR FIGURES ON OPPOSITE PAGE

Fig. 1—Drawing of a section of a tumor at its point of attachment to the wall of the milk cistern. This illustration shows the subepithelial tissue being incorporated into the tumor. The mass at the upper left portion of the drawing is a section of an adjacent lobe of the tumor. x 10.

Fig. 2—Illustration of the bizarre growth pattern of a group of tumors arising from the subepithelial tissue of the cistern wall of the mammary gland. The boxed area is shown in greater detail in figure 3. x 10.

Fig. 3—A portion of a lobe of one of the tumors. The greater concentration of connective tissue, corresponding to that seen in the central areas of the tumors, is shown in the lower portion of the drawing. x 80.


1
2
3

The histology of the two spherical pieces of tissue found in the cistern was that of the enlarged ends of the neoplasms. Prominent venous spaces of one of these masses marked that tissue as having been a part of a particular tumor, which contained large veins showing thrombus formation toward the broken distal end.

DISCUSSION

Because of the peculiar tissue changes seen in the tumor described, it is difficult to choose a suitable pathologic classification. Although a variety of terms pertaining to small tumors of the fibrous, vascular, and epithelial elements of the mammary gland of the human being are found in the literature, such terms cannot be applied to processes of the udder. Other than the parenchymatous tissue and the collecting duct system of the two organs, the anatomy of the human and bovine mammary glands are not comparable. In many respects, the individual tumors described in this paper resemble polyps. It is felt that the term "multiple cisternal polyps" best describes the pathology of this case.

There is a large body of information concerning the pathology of the udder; however, this information deals chiefly with inflammatory changes and *in vitro* observations of the secretion of the gland and its bacterial flora. Anatomic examinations of a type necessary to disclose the existence of the tumors described in this paper have been too few to give an accurate estimate of the frequency of their occurrence.

SUMMARY

1) A case of multiple cisternal polyps of the bovine mammary gland is described.

2) The tumors arise from the tunica propria of the cistern and are composed of connective tissue and vascular elements of that portion of the mammary gland.

3) Although the incidence of this type of neoplasm cannot be judged at this time, its occurrence is of interest since neoplasms of the parenchymatous tissue of the udder are reported to be rare.

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Suspected Diaphragmatic Hernia in a Draft Horse

When called to see the case in the spring of 1946, the owner reported that the horse —a 14-year-old gelding—had suffered a peracute attack of colic while working in the field. The animal appeared normal when I arrived. Auscultation of the chest revealed no abnormal heart sounds but active borborygmus. The same sounds, *i.e.*, muffled heart and loud intestinal noises, were revealed in subsequent examinations. The horse had been a good worker except for having suffered minor attacks of colic some months previously. He appeared normal at rest but could not stand a hard pull in the collar. At this time (Dec. 1, 1947), the horse appears healthy and does light work. A diagnosis of diaphragmatic hernia with the displacement of intestines into the thorax was made. Later, a case report published in the JOURNAL* dispelled my mental reservations.—*L. M. Koger, D.V.M., Ontario, Ore.*

*Sinclair, Luke R. and Davis, Robert W.: Diaphragmatic Hernia in a Horse Cadaver. J.A.V.M.A., *109*, (Dec., 1946): 459.

DDT—Sprayed Cows Unlikely to Produce Toxic Milk

Even when cows are given heavy sprayings of DDT for insect control, and even though precautions are not taken to keep them from licking themselves or other sprayed animals, there is virtually no danger that their milk will be toxic to consumers. This conclusion was reached by Howell and collaborators of the Oklahoma experiment station (*J. Dairy Sci., 30*, Sept., 1947: 717-721).

When cows were sprayed heavily with DDT and as much as 33.6 p.p.m. was found in their milk, the milk had no appreciable toxicity for mice, mosquito larvae, or flies. Since the study showed that DDT is excreted slowly in the milk over an extended period, toxic milk is unlikely. Animals sprayed with excessive amounts continued to eliminate the drug until the end of their lactation period, 119 and 126 days after the final spraying, but none after freshening.

Hogs fed on concrete floors need 12 to 15 sq. ft. per head.—*University of Illinois.*

The Suitability of Salmonella Pullorum Strains Used in the Agglutination Test for Pullorum Disease Control

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MANY of the stock cultures of *Salmonella pullorum* strains commonly used for the production of antigen are unsatisfactory for the detection of all forms of pullorum disease in fowl for three main reasons:

1) The common antigen strains do not possess the complete antigenic structure of *S. pullorum*.

2) Many of the stock cultures of *S. pullorum* strains, from which multiple-strain antigen is prepared, are dangerously insensitive to their homologous agglutinins.

3) Rough variation is apparent in a fairly high percentage of the stock cultures of *S. pullorum* strains kept for the preparation of antigen.

I shall qualify these statements by presenting some of the observations made at the Department of Bacteriology, Ontario Agricultural College, and by others elsewhere.

The isolation of a *S. pullorum* variant was reported by Younie in 1941. The disease caused by this type became popularly known as variant or X pullorum. Several of the flocks from which this variant *S. pullorum* could be isolated were totally negative to the standard tube agglutination test. Cross absorption of homologous serums by the standard and variant strains was incomplete; hence, we suspected that the standard strains did not possess the major antigenic factors of all types of *S. pullorum*. Experimental evidence has shown this to be true of strains 17, 19, and 20 of the northeastern states and strains 4, 10, and 11 of the U. S. BAI.

Antigens made from the common strains did not suffice to control the infections caused by *S. pullorum* variant. This is evident by the increase in the number of reactors in Ontario from 1940 to 1944 which was from 1.3 per cent to 4.3 per cent. Frequent necropsies and bacterial examination of birds negative to the standard antigen and positive to the variant antigen yielded variant *S. pullorum* strains.

We have followed the procedure of the Northeastern States Laboratory Workers in Pullorum Disease control for antigen production and testing, and our antigen has been favorably assessed by the antigen committee annually since 1928. This antigen alone, however, would not control both types of the disease; hence, we were forced to test with a second antigen prepared solely of variant strains of *S. pullorum*. It had been determined that neither of the antigens alone would detect all the carriers of both types of the disease. Experimental evidence also indicated that a composite antigen prepared by mixing the two types was impractical.

Prior to the 1943-1944 testing season, when it became compulsory to have breeding flocks in Canada double tested, the variant test was optional with the hatchery owner and breeder. The burden on the industry and laboratories concerned can readily be seen. Justification of this policy, however, is borne out by the fact that the total number of reactors in the 1945-1946 season (the second season of compulsory double testing) was reduced to 1.2 per cent from 4.3 per cent the previous year and in the 1946-1947 season the total number of reactors was 0.3 per cent. This represents the lowest number of reactors in Ontario in nineteen years of testing. However, in the intervening years we have not lost sight of the fact that the double test is cumbersome, and critical research has continued.

Reports have been made from time to time by Younie, Gwatkin, Glover, Edwards and their associates, as well as by the Department of Bacteriology, Ontario Agricultural College, in coöperation with the Department of Poultry, regarding various phases of research in pullorum disease control. The different phases reported include transmission, pathogenicity, breed susceptibility, hatchery sanitation, chemical treatment of antigens, composite and single

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strain antigens, agglutinability, and antigenic analyses of standard and variant strains.

Probably the most significant results concerning the antigen situation were reported by Edwards and Bruner in the October, 1946, issue of *Cornell Veterinarian*. Their antigenic analyses of the two types of *S. pullorum* showed that the difference between the standard and variant strains is essentially a result of form variation involving the XII factor. They point out that the standard strains of *S. pullorum* possess factors IX, XII_1, and XII_3, while the variant strains possess essentially factors IX, XII_1, and XII_2.

Since the XII_2 or XII_3 agglutinin comprises a large proportion of the agglutinins produced by fowl naturally or artificially inoculated with *S. pullorum*, it is essential that test antigens possessing both these factors be used for the control of the disease. To date, we have done this by the use of two separate antigens for the tube test. A single antigen composed of the two types (standard and variant) is being used for the whole blood test at present with favorable results.

The variant form of *S. pullorum* is not confined to Canada. It has been recovered in most of the provinces and in 15 of 17 states in the United States, which were surveyed in 1945. Edwards and Bruner report that, of the *S. pullorum* strains isolated in Kentucky, approximately one-third of them were variant or XII_2 forms. They also state that, since the XII antigenic factor of *S. pullorum* is subject to form variation, it may become stabilized in either the standard XII_3 form or the variant XII_2 form. With this in mind, and realizing the burden of continued double testing for pullorum disease, we have followed the suggestion of Edwards and Bruner that it might be possible to obtain a single strain possessing all the major antigenic factors common to both forms.

Single colony examination of several standard strains yielded a small proportion of colonies which possessed a weak XII_2 antigenic factor. These substrains were not stable and quickly lost the XII_2 antigenic factor within a few subcultures. Several thousands of colonies from recently isolated strains, which exhibit a much higher incidence of XII_2 forms than the common antigen strains, have been examined, and several substrains have been retained for further study.

The antigenic formulae of these selected strains is essentially IX, XII_1, XII_2, XII_3 or, in other words, they possess all the major factors of both the standard and variant forms. The details of this work may be found in the March, 1947, issue of the *Canadian Journal of Comparative Medicine*.

No claims are being advanced regarding this strain for antigen production; however, absorption tests have shown that it will remove all the agglutinins from standard and variant immune serums. An antigen prepared from this strain is being used to determine whether it possesses the other characteristics of a desirable antigen.

It is important to note that the use of an antigen containing the XII_2 antigenic factor has complicated the reading of tests. An antigen made from the XII_2 form will react with serum from birds harboring low-grade infections caused by antigenically related organisms belonging to the paratyphoid, coliform, and enterococcus groups. Results of work to determine the significance of such reactors have been published recently by Garrard *et al.* in the *Canadian Journal of Comparative Medicine*, April, 1947. This important phase dealing with the nonpullorum reactor is being continued.

It is interesting to note that approximately half of the Salmonelle other than *S. pullorum* isolated from fowl possess the XII antigenic factor which may be subject to variation. Antigen prepared from standard or XII_3 form of *S. pullorum* will not cross agglutinate with those in the XII_2 form. This is of public health significance. To illustrate that, I need only mention the isolation of *Salmonella reading* in our laboratory from the ovary of a reactor to the variant *S. pullorum* antigen which was negative to the standard pullorum antigen.

Aside from the standard strains of *S. pullorum* not possessing the complete antigenic structure necessary to detect both forms of pullorum disease, these strains also vary widely in their sensitivity to homologous agglutinins. We reported this variation in sensitivity in the *Canadian Journal of Comparative Medicine* in March, 1947. Fifty-three strains of standard *S. pullorum* were obtained from 18 different laboratories in various states of the United States and provinces of Canada. Most of the labora-

tories submitted three strains which they commonly combined to prepare a single antigen. Antigens were prepared from each culture and compared for sensitivity to agglutinins IX, XII_2, and XII_3 using absorbed serums. These results are very revealing in so far as sensitivity of the cultures is concerned. The highest titer in which any antigen was agglutinated was 1:800. This is true of both the IX and XII_3 serums. The majority of the antigens were not agglutinated above a titer of 1:200, and one antigen was only agglutinated in a 1:50 dilution in the factor IX serum while the factor XII_3 serum was negative. None of the 53 antigens was agglutinated by the XII_2 serum.

Low sensitivity was not characteristic of any one strain, but it was evident in one or more strains from each laboratory. In practically every case where two or more strains were received from the same laboratory, at least one of them was very low in agglutinability. The effect of combining the antigens from more than one strain of unequal agglutinability tends to lower the sensitivity of the final antigen as compared with one composed of a single sensitive strain. Realizing that it is perhaps easier to maintain normal sensitivity in a single strain, and to preclude the possibility of a strain losing sensitivity where more than one strain is combined in the preparation of stock antigen, we are experimenting with an antigen prepared from a single strain. Hence, we are preparing our standard antigen this year from the BAI 11 strain of *S. pullorum;* and the variant antigen from strain 296. This does not necessarily imply that all strains of BAI 11 are superior to other standard strains; however, it was one of the strains which was chosen as comparatively sensitive when tested against the other strains on hand at the time.

In Canada, we favor the procedure that stock cultures of *S. pullorum* be lyophilized and kept in vacuum-sealed ampules by a central laboratory available to provincial laboratories. By so doing, we hope that more attention will be paid to the uniformity and state of cultures used for antigen production. In any event, all provinces will be able to obtain stock cultures of similar antigenic sensitivity.

Dr. Edwards has recently reported on the tendency for *S. pullorum* antigen strains to become rough. We found serologic roughness apparent in a fairly high percentage of stock antigen strains. Of the 53 cultures previously mentioned, 8 (17%) of them were undergoing smooth to rough (S-R) variation when received. All of the reasons for S-R variation are not clear; however, certain factors in the method of artificial culture are known to promote mutants. Slight irregularities unfavorable for the smooth growth and development of the antigenic factors may only be detected by prolonged culture. Some strains are prone to become rough, and it may be difficult to recover smooth cultures from them. Moreover, the uncertainty of the value of tests for roughness and the effect of incipient roughness on the agglutinability warrants renewal of a suspected culture when antigen production is considered.

SUMMARY

Form variation in *Salmonella pullorum* has necessitated double testing in Canada.

By selection, a strain possessing the major antigenic factors of both forms has been obtained, but we await experimental evidence to determine its value as an antigen.

Many of the stock antigen cultures of *S. pullorum* are so insensitive to homologous agglutinins that their inclusion in an antigen is undesirable.

The frequency with which smooth to rough (S-R) variation is encountered when several cultures of *S. pullorum* antigen strains from widely separated sources are examined indicates that more attention should be given to this type of variation.

DISCUSSION

CHAIRMAN POMEROY: Before we open this paper for discussion, I would like to ask Dr. Phil Edwards if he would like to make any comments at this time.

DR. PHILIP R. EDWARDS (Lexington, Ky.): No, I have no comments. I can confirm most of Mr. Wright's statements so far as our limited experience has gone. In Kentucky, Indiana, and Ohio, there are a lot of pullorum variants. We find a fair percentage of infection in chicks imported from Ohio and Indiana. I also know, from cultures that have come to us, that variants are present in many other states.

CHAIRMAN POMEROY: Dr. Gwatkin, have you anything to say?

DR. RONALD GWATKIN (Hull, P. Q.): I agree with Professor Wright on conditions in Canada. We get a clear-cut form in flocks, some regular or standard, others only variants.

If he has found a form which has a balance of XII_2 and XII_3, it would be a great help to us—if the culture can be maintained in that condition. We examined about 100 cultures, without success.

The only doubt in my mind is this: This strain may work with specific form series called XII_3 and XII_2 and perhaps paratyphoid, but when they come

to the true pullorum, will they do the same thing? Have you had an opportunity of trying that in the field?

DR. WRIGHT: We haven't tried that in the field; however, we had an experimental lot consisting of over 300 artificially inoculated birds. It will pick out the reactor birds, birds which have been proved to carry infection.

My entrance into this particular phase of the work is due to Dr. Edwards. In his laboratory, and under his guidance, he started me off. I have only been working on this since last August and have examined about 5,000 colonies.

Coccidioidomycosis in a Dog

Coccidioidal granuloma in the dog appears to be rare. In the available literature only a few reports of the condition could be found. Furness[1] and Plummer[2] reported cases in 1940 and 1941 respectively.

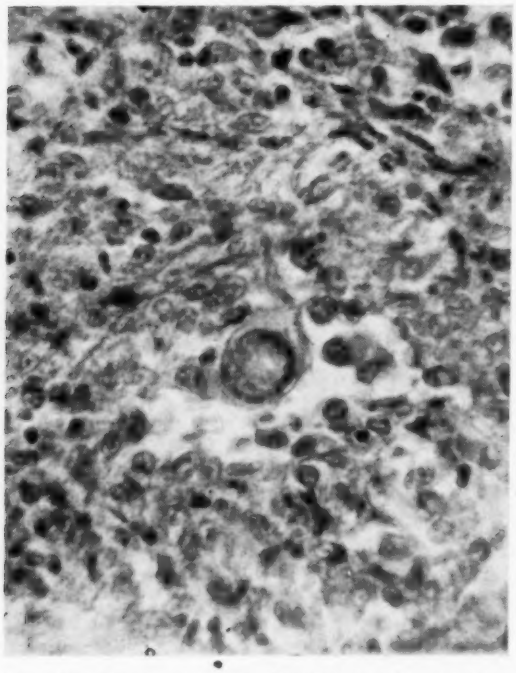


Fig. 1—Spherule of Coccidioides immitis in lung lesion. x 430.

On Nov. 30, 1947, a red male Cocker Spaniel about 1½ years old was brought to Dr. Spring's hospital in Corpus Christi, Texas. The dog had a history of a steady decline for the past six months. He appeared emaciated and dehydrated. There was lameness in his left hind leg, constant shivering, and diarrhea. His appetite was excellent but he appeared distressed after eating. The superficial lymph glands were slightly enlarged. The abdomen was tense. Both corneas were cloudy. Penicillin, sulfonamides, sodium iodide, saline, and glucose were used but nothing checked his downward trend. Death occurred eight days after admission.

On postmortem examination, the liver and spleen were slightly enlarged and congested. The lungs contained small white nodular areas about 1 mm. in diameter. The gross appearance of the lungs was suggestive of miliary tuberculosis, yet none of the nodules contained any grossly visible centers of necrosis. Microscopic examination of the tuberculoid nodules in lung sections showed very little encapsulation. They were composed principally of macrophages with a light infiltration of lymphocytes and plasma cells. Only a few giant cells were

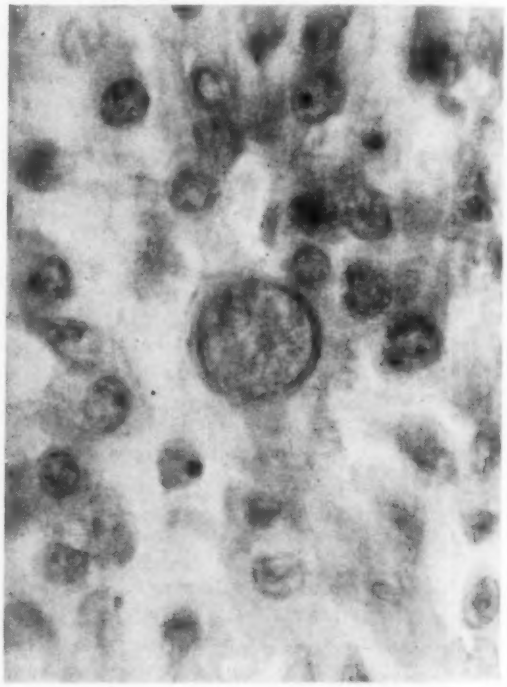


Fig. 2—Coccidioides immitis surrounded by macrophages. x 930.

present. The spherules of *Coccidioides immitis*, as shown in figures 1 and 2, were found in the nodules.—*J. M. Spriegel,* D.V.M., and J. H. Milliff,† B.S., M.S., D.V.M., College Station Texas.*

*Practitioner, Dr. J. E. Spring's Animal Hospital, Corpus Christi, Texas.

†Professor and head of the Veterinary Anatomy Department, Texas A. & M. College, College Station.

[1]Furness, O. J.: Coccidioidal Infection in a Dog. *J.A.V.M.A.*, 97, (1940).

[2]Plummer, P. J. G.: Coccidioidomycosis with a Pathological Report of a Case in a Dog. Canad. J. Comp. Med. and Vet. Sci., (May, 1941).

Thymoma in a Cat

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Washington, D. C.

According to available literature, lesions of the thymus gland are of rare occurrence in animals. Thymomas constitute one variety of mediastinal tumor and are commonly taken for lymphosarcomas. The growth is highly malignant, compresses the trachea and other structures, invades the lung, and metastasizes to bronchial, cervical, and axillary glands and sometimes to distant organs. The following case report illustrates pathologic changes incident to this disease.

On March 14, 1947, a male Persian cat, age 2 years, was presented for treatment with a history of vomiting, diarrhea, and anorexia of three days duration. Upon examination, the animal appeared dehydrated, depressed, and somewhat emaciated. The temperature was 104.2 F. and the mucous membranes were dry and indicative of a severe anemia. A tentative diagnosis of enteritis was given and the owner advised to leave the animal in the hospital for treatment.

Therapy consisted of 150,000 units of penicillin in oil and wax daily, therapeutic doses of sulfadiazine, liver extract injections, and appropriate supportive measures. Recovery was rapid and the animal was discharged in seven days much improved.

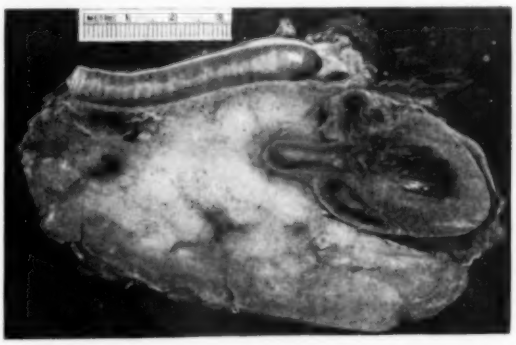
On May 15, the animal was again brought to the hospital with similar history and symptoms and, in addition, showed a marked dyspnea. Upon auscultation of the thorax, extreme dullness was noticeable over the entire region. Respiration was labored and abdominal in character. Therapeutic measures were unsuccessful and the animal died soon afterward.

Upon necropsy, the thoracic cavity was found to contain about 100 cc. of straw colored fluid. The cavity contained a large, uniformly grayish mass which filled the thorax and invested the trachea, esophagus, and heart, and displaced the lungs. It was approximately 10 cm. long and 5 cm. wide in its greatest diameter and roughly conformed to the shape of the thorax. Other postmortem findings were not significant.

Pathologic studies were conducted by the Army Institute of Pathology and are as follows:

The growth is made up of individually discrete round cells with scant cytoplasm and large, round, finely stippled nuclei which contain a single nucleolus. Mitotic figures are numerous and necrotic cells are scattered all through the new growth. The section of lung shows atelectasis, presumably the result of compression. Diagnosis: lymphosarcoma, thymus, feline.

There is some question as to the exact derivation of thymic tumors. They are commonly thought to arise from the lymphoid tissue of the gland, but many of the cells are large and irregular and there is reason to believe that the neoplasm arises from the epithelial cells of the reticulum rather than the lymphoid cells. Boyd[1] states that occasionally the tumor has a frankly carcinomatous nature. Evidently, there is a fine line of distinction between lymphosarcomas and small round-celled



Lymphosarcoma of the thymus gland in a male Persian cat.

sarcomas and the two are often confused on examination of a single section. According to Ewing,[2] thymic tumors fall into two main groups: lymphosarcoma, which is soft, hemorrhagic, and fast growing; and the slow-growing carcinomas, which are found to be remarkably dense from diffuse fibrosis. The gross appearance of the tumor mentioned in this case report seems to resemble the lymphosarcomatous type.

[1]Boyd, W. E.: Textbook of Pathology, 4th ed., (1943): 788.
[2]Ewing, J.: Neoplastic Diseases, 2nd ed., (1922).

Traumatic Injuries in Small Animals

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THIS IS not a scientific paper, but rather a report by a clinician on some things learned in years of small animal practice. The object is to discuss traumatic injuries of interest to you who handle the common cases in practice. Luxations and fractures have been of great concern to me, and I hope to offer you something of special value along those lines.

Traumatic injuries are caused by accidents: bite wounds, falls, gunshot wounds, automobile accidents, and injuries resulting from having been stepped on. The injuries consist of hernia, displaced eyeball, displaced testicle, luxations, and fractures. Coupled with the above, there is the important matter of shock.

SHOCK

Shock is perhaps the most important of the list, because preservation of life is involved. Therefore, all attention must be given to keeping the patient alive. Much has been written about this condition, yet it is difficult to define. Some of the symptoms observed may be very fast breathing, pale membranes, anxiety, prostration, apparent internal hemorrhage, etc.

Some shock cases appear entirely hopeless, but with stimulants, hemostats, fluids such as saline and glucose or, better yet, whole blood, or blood plasma, they rally and often are out of danger in a short time. It is prudent to get the patient into the hospital and away from the owners at once. The owner cannot help save the life, his presence is often annoying, and he often insists on a sedative, which might be contraindicated.

If, during the first hour, the patient appears to improve considerably, it may be wise to have the owner see the animal as death often follows during the day, and it could be a bit difficult to convince the owner on the next day that death didn't occur within the first few minutes. In other words, if you have done a good job quickly, show it.

Despite the urgency, it is wise to proceed slowly as to further examination or diagnosis. Give the injured animal time to get a lease on life before further procedure. This may take a few hours or a few days, but do not be hurried at the patient's expense.

It may be pertinent to relate some of the circumstances and events observed in the handling of a case of so-called shock by a southern California colleague. While I was talking with the doctor, a client, 12 miles away, brought a grown Airedale which had just been run over by a car. The dog was in a sad state; he was prostrate, membranes were perfectly white; there were no reflexes in his feet, and there was evidence of spinal injury. He was struggling for breath, and a mere touch on the abdomen caused him to wince in pain. After giving him all the treatment possible within half an hour, we considered the possibility of internal hemorrhage, broken back, ruptured liver or spleen, or crushed mesenteric arteries and decided that he would not live. In view of the fact that the owner did not interrupt, we had ample time to discuss and speculate; later the patient was removed to a large compartment to be made comfortable. To our surprise, he promptly got up, took a few steps, and then assumed a natural position lying down. Outside of x-ray and fluoroscopic examination, some attention to the presence of bloody urine, and a few minor details, little else was necessary. In three days, the dog was taken home, apparently well. Needless to say, the owner was overjoyed at the result and rather nonplussed at the low fee charged, which was perhaps less than half what she would have paid gladly in view of excellent service.

To get back to injuries—often it is easy to be led astray by an owner, an assistant, or a night man. An animal may be presented after an accident with one leg dangling, yet appear to feel quite well. The owner might insist on a sedative at once. This is not a wise move for the minute the sedative is given, the animal is semiprostrate and a further attempt to stand up is eliminated. With the dog in this condition, the doctor is inclined to proceed with the treatment of the apparent fracture, without further consideration as to other fractures. If this happens (and I confess it has happened more than once to me), it may

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be found the next day that it is impossible for the patient to walk on three legs. We expect a four-legged beast to walk on three legs and are put out if he fails. If the situation described above obtains, the doctor should make sure that the other legs are all right. Once, in a St. Bernard, I found not only one more but two more fractures. To be truthful, we had put a cast on one dangling hind leg, after morphine had been administered, and the next day we found two additional green-stick fractures, one a fracture of the tibia, the other a fracture of the radius and ulna. The moral of the story is this: Be sure that the patient can walk before you make a diagnosis as to the number of fractures. Complete fluoroscopy eliminates most doubt, but there can be spinal injury or radial paralysis that would be missed regardless of x-ray.

BITE WOUNDS

In the consideration of bite wounds in cats, there are three sites most common and all serious; the foot, the tail, and the region at the base of the tail. Ordinarily, these are old and badly infected cases when presented.

If only one toe is affected, amputation is indicated at once in the house pet. It insures prompt recovery and no harm is done. If more than one toe is involved, it is well to attempt treatment. Usually, there are tracts running from top to bottom of the foot, with tendons, ligaments, and all tissues involved and infected. If the skin on top of the foot is purple and underlaid with fatty tissue, it is well to cut away a lot of the skin. Prepare a silver nitrate applicator as follows: Take a piece of wire (the size of a wire coat hanger) about 3 in. long, pound it flat on one end, heat it in a flame until red hot, dip it into a bottle of silver nitrate crystals, and almost immediately pull it out and allow to harden on the wire. If necessary, heat it a little more until a nicely rounded globule of silver has adhered to the wire. (Make several of these.) Pass this silver nitrate back and forth, up and down all the fistulous tracts, This will slough out all of the tissue that is objectionable, and in a few days there is healthy muscle in sight. Therapeutic doses of penicillin will do wonders as a complement to this cauterization.

Bad infections of the tail are most quickly repaired by amputation, but if this is refused, proceed as above. The back of the cat which shows chronic abscess formation may be treated as above, after first cutting away all the diseased skin.

Fresh wounds respond wonderfully well if they are thoroughly cleaned with water, the hair and dirt removed, sulfa powder applied, and in many cases sutured. Before the advent of sulfonamide drugs and penicillin, almost all such wounds festered regardless of treatment, and suturing was more detrimental than helpful.

Bite wounds such as slashes and tears, which formerly caused considerable trouble in dogs, heal up quite well if the hair and dirt are removed and sulfa powder applied, followed by suturing, but some of these still cause trouble.

The bite wounds inflicted on a dog over the withers produce sloughing of skin and some deeper flesh in some cases. Usually, these do not appear at the office until necrosis of much tissue has ensued, and then it is necessary to provide drainage and to help with penicillin. Use penicillin generously from the start.

A serious situation in bite wounds is one in which a dog has been chewed thoroughly, and one or more legs has been punctured in many places. If only one leg has been thoroughly chewed and traumatized, it might be wise to amputate at once. I will not advise you when to amputate, but I have seen many cases that died when, perhaps, amputation would have produced better results.

There may be better ways to determine the seriousness of bite wounds, but it is my opinion that when serious multiple bite wounds in one leg are encountered, it might be smart to advise amputation at once. The only trouble is that there is no precedent.

CARE OF THE EYES

Following any severe injury which renders the patient unconscious, the matter of care of the eyes is of utmost importance. This is true in human beings perhaps more than animals. In fact, an experienced surgeon told me that if any corneal trouble appears following an accident, those in charge get the blame.

Here is the situation: A patient is unconscious, the eyes are open, and of course when eyes are open the cornea dries. Dry corneas usually ulcerate. Ulcerated corneas

can easily result in blindness; to prevent this, lubricate the eyes with mineral oil and, when possible, keep the lids closed. Care of the eyes in an unconscious dog is much the same as if the eyeball were displaced; therefore, after a brief discussion of displaced eyeballs, this care will be expounded at greater length.

Eyeball displacement is common in bite cases and in automobile accidents. In very severe injuries, it is sometimes advisable to enucleate the eyeball at once. There is no rule to follow, but experience teaches us that when the eye is badly bruised, perhaps totally dry on the cornea, and when it is impossible to replace the eye in its socket and hold it there with moderate pressure, the eyeball should be removed.

If it is possible to replace the eyeball, one can lubricate it well with oil and then, with a wet compress of gauze or cotton, exert pressure against the ball itself. Many eyes are replaced easily. If the eye appears to be too large to pass through the natural opening, and if the cavity back of the eye is not filled with blood and traumatized tissue, the outer canthus can be cut slightly, which enlarges the opening and permits easy replacement.

Unless the eyelids close completely of their own accord, they should be closed by sutures, which are placed in the skin only and passed from upper to lower lid in such a manner that they do not touch the eyeball. It is well to make a complete closure because, when a space is left open, the cornea dries and ulcerates.

The eye must be well lubricated and the lids closed until normal blinking establishes the natural moisture. Sometimes it is possible to bandage an eye and keep it closed and, when accomplished, this is an advantage because of the ease of future dressing.

DISPLACED ORGANS

Testicles.—One should inspect a male animal following injury, as one or both testicles may be displaced from the scrotum. This condition is ordinarily not serious if promptly corrected, but if it is missed for a day, it may be impossible to effect replacement, and the organ may enlarge and require surgical removal.

Replacement is accomplished by merely pushing the organ back into its proper place, and holding it there by applying a piece of ¼-in. adhesive tape around the base of the scrotum just tight enough to prevent escape. The tape can be removed and replaced if necessary at intervals, but usually it can be eliminated after a day or two.

Hernias.—Traumatic hernias are abdominal and diaphragmatic. In the latter, there are certain symptoms which seem almost unmistakable, yet at times one can be misled if appearance only is relied upon. For instance, it is possible to note labored breathing, anxiety, distress after a light meal, sitting posture, and other symptoms which point to a ruptured diaphragm, only to find involvement of the lung itself, or of the chest cavity. Some men profess ability to diagnose the condition from across the room, but I find it more difficult. Without question the x-ray is a great aid. The procedure is called "barium study." Barium is mixed with water and given by mouth. Fluoroscopic examination is made within a few minutes while the barium is in the stomach and repeated at intervals, in order to follow the progress of the barium, which shows up as dark spots in the intestine and as a large, dark object in the stomach. If the stomach and intestine show plainly that they are not in the chest, one can feel fairly safe in saying the diaphragm is intact. At times, however, there is difficulty with the fluoroscope alone, so if in doubt, take a picture, in which case the barium shows light on the radiograph. Do not rely entirely on a lateral view, because if the patient is placed on its back and viewed from the ventral aspect, the condition shows more plainly.

Surgery of the diaphragm is tedious, difficult, and requires special technique and equipment for maintaining artificial breathing. By connecting several wheels with belts, we have contrived a machine which gives perfect results. This is driven by a ¼-h.p. electric motor which operates a bellows. An arm on the last wheel presses the bellows at each revolution of the wheel, then slips off, and breathing is regulated according to the needs of the patient. From the bellows there is a rubber tube about 2 ft. long, a glass tube, and a shorter rubber tube. The last rubber tube is placed well into the trachea, down close to the bifurcation. This operation is greatly aided if the epiglottis is grasped with a tenaculum and the larynx pulled forward into plain view. When the tube is in place, it is held there by taping it to the lower jaw. The object of the glass connection between the two rubber tubes is to disconnect it quickly if necessary. By listening to the movement of air in the glass

tube, it is possible to be certain that the rubber tube is in the trachea. The surgery will not be discussed.

One point should be stressed, however. After surgery is complete it is necessary to remove the air from the chest with a hypodermic needle and syringe. Theoretically, breathing should start voluntarily. In case it does not, it is possible that the machine is working too fast and that there is not enough carbon dioxide to stimulate breathing. In this case, it is well to decrease the stroke of the bellows and in a few minutes try again. When sufficient carbon dioxide is present, breathing should start. After reading some reports on diaphragmatic hernia, one might judge this operation to be a simple one. Some time ago, there was a report which stated that the surgeons were experiencing no trouble and that the last 6 cases recovered without event. This is good news, but these cases do not always recover. Any accident of such violence as to tear the diaphragm is apt to do other damage such as tear the liver, spleen, or still worse, crush the mesenteric arteries.

For example, 1 of our cases recently was badly bruised throughout the length of the intestine and large clots of blood appeared throughout the mesentery. This dog lived ten days, during which time he felt well enough to take food irregularly, but died of intestinal injury. Then too, mechanical pneumonia can develop, as well as other secondary factors which might cause death.

Traumatic hernia affecting the abdominal wall usually occurs in the groin and may show swelling and discoloration. This can offer unusually bad situations. For example, there may be so much swelling that it is impossible to recognize rupture by palpation. In such cases, barium plus x-ray is of great value. Another case may be diagnosed readily as rupture, but it is often almost impossible to find the exact location. For a long time, we have located these ruptures as follows: When ready to operate, instead of incising back in the groin where we cannot locate the rent exactly, we open on the median line enough to admit a finger. Then we explore the abdomen from the inside with the finger until the exact location of the tear is determined. By this method, we are able to incise exactly as necessary, and we often operate through a much smaller incision, which in some cases is most important.

Many times the abdominal muscle is torn from the pelvis, leaving almost nothing but bone. These are usually in the flank region, and the medial thigh muscles may be used as an anchor. Rest and adhesions appear to complete the recovery.

LUXATIONS

Elbow.—Luxations of the elbow are common and for the most part are easily diagnosed and reduced. However, there are some that are just the opposite and it is those about which we are mainly concerned.

Some of these elbows are so stubborn that even after an hour or more of effort they refuse to give up. The two bones join, the processus anconaeus fitting into the humerus. It is necessary to flex the joint completely in order to accomplish reduction. Here is an instance of an obstinate case which proves how long it may take and also how easy it is to correct when all is right.

A mature setter was examined by three of us and three different conclusions were reached. One diagnosis was a presumed fracture, because of slight crepitation. There was almost complete freedom of motion of the joint, which would lead one away from luxation. In addition, the radius and ulna did not appear to be out of line with the humerus. The fluoroscope revealed that there was a complete luxation of the joint, the radius and ulna being lateral to the humerus, which is the usual finding. There was little swelling and the joint was free, so one would expect to move this one into place easily.

I flexed the joint completely. This position was necessary for reduction. It should have been readily reduced. I worked until my hands and arms were tired, then asked my associate to continue. He did all he could for another half hour, and I took another turn to no avail. During this time we used fluoroscopy many times and found that we were making no progress whatever. After both of us had left the table, our colleague, who had brought the patient to us, took hold of the leg and flexed it completely. He did no pressing at all, but the bones slipped into place. This is a typical example of what happens in luxated elbows.

On first consideration after examining the bones, it seems plain that with the joint in complete flexion, it would be beneficial to push the distal end of the humerus forward and the radius and ulna backward. This can be accomplished in two ways: by manipulating them in the two hands or by passing a steel pin through the olecranon and pulling backward on that bone. In either case, instead of trying to shove the bones into place, do what might be described as

"walking" them into place, with a wiggling motion.

There are many queer stories on elbow luxations. A man of good repute reports working for ninety minutes on one, with no results. Just as he told his helper that he was going to give up, he flexed the joint, gave it a good blow with his fist, and in it went.

Hip.—Ordinarily a hip is pushed out of joint so that the head of the femur is above and forward of the acetabulum. However, it is possible to have the head of the femur pushed below the rim of the pelvis. Here is a specific example.

A German Shepherd was in this condition for two days, and I was asked to observe her. The day before, the dog had been put under nembutal, a lariat rope attached to the foot, and traction applied, but there was no reduction. This leg was fixed in complete extension so that there was no chance for nature to intercede. Nembutal was given to good effect. Some traction was applied and since it wasn't immediately possible to get reduction, a broom handle about 4 ft. long was slipped under the thigh and an 8-in. brick was set on end against the spine. By putting the end of the broom handle on the brick, holding the leg down at the stifle, and lifting the long end of the handle, the femur slipped into place as easily as setting a cup in a saucer. Here, quick thinking replaced force.

In almost all hip luxations, the head of the femur is anterior and above the acetabulum. Clinically, this luxation shows the following: one leg is short, usually swinging under the body. The leg is not being used, and when the patient is put on the table and a finger placed in the groove between the great trochanter and the tuber ischii, the finger is not pinched when the leg is rotated, because the head of the femur is not stationary, while in a normal hip joint this procedure will pinch the finger. This last measure is valuable in final diagnosis. Reduction should be possible with the hands, unless of more than seven days' standing. Grasp the hock region, rotate the head of the femur forward, and pull. This should accomplish reduction. Some of these slip in joint too easily, and when that happens, it could mean that they will slip out too easily. It is well to determine how loose they are. If they appear very solid, it might be all right to forego casting. If they appear quite solid, apply a so-called sling cast. Luxations of the loose type should receive the application of a spread cast.*

FRACTURES

Treatment of fractures in the animal field can require bone surgery, open reduction, and bone pinning. This latter procedure will be discussed and a new fixation splint for animals will be presented for your inspection.

Bone Pinning.—The outstanding features are as follows:

The pins are inserted directly into the bones through the skin and flesh. Since there is no pin bar through which the pins must pass, pins may be placed at varying angles and positions, thus giving great flexibility. The hand chuck has a hollow handle which affords protection to the patient and operator alike, and makes pin placement much simpler.

A pin is placed in the chuck with 1 in. of the point protruding. Since so little of the pin is exposed, the pin is too short to plunge through the patient and perhaps the operator's finger as well, should the pin slip off the bone (which often happens). As the pin is forced into the marrow cavity, the chuck is opened and enough pin exposed to pass through the second cortex of the bone. The short pin is an aid in holding it steady and directing it properly. When all four pins are in place, single clamps are slipped over the pins. Then rods and double clamps are assembled.

The single clamps may be placed on the pins any distance from the skin, which is very important since the operator can allow for swelling, and if he should be wrong, correction can be made at any time afterward, without removing a single pin.

Regardless of the equipment employed, certain rules apply to all bone pinning. Pins are placed at a converging angle; they should penetrate the entire bone and protrude ¼ in.; and when finished the points should be ¼ in. apart. Instead of putting the pins near the fracture site, as the novice expects, the pins are put in the bones near the articulating ends, because muscles are attached there and this position affords a better opportunity to manipulate the fragments. Bear in mind that two pins are placed in each fragment of a simple fracture, and they offer a firm grasp on both parts of a broken bone. Complicated fractures sometimes call for more than four pins.

When a bone is broken, the muscles contract and pull the fragments so that there is overlapping, which in case of the femur may be from 1 to 3 in. In view of this overlapping and the resultant shortening of the leg, it seems

*The sling and spread casts were described in the December, 1934, issue of the *North American Veterinarian*.

imperative that proper length be obtained in the beginning. If pins are inserted while the leg is short, much damage is done to the soft tissues when proper extension is created later. Please realize that it does not matter how much the skin itself is moved if the underlying soft tissues are still out of place in relation to the bone, and they will be torn during extension if pins are inserted while the bone fragments are overlapped.

To avoid this situation, it has been our practice to extend the leg to near normal length before anything else is done. This is accomplished by a special device which is fastened to both legs in such a manner that the short leg can be pulled out to full length. Extreme traction, applied too drastically and too rapidly, might cause injury to vessels and nerves. In our experience, if traction is applied gradually and at intervals allowing a minute or two of rest to revive circulation, there is no injury that we know of, and length can be reëstablished. Therefore, give every attention to the matter of reëstablishing proper length before inserting pins.

After extension is correct it is possible to release the traction, as the muscles do not just snatch the bones back where they were.

In the early stages of our work, we found it difficult to hold the broken leg by hand alone, so we placed a board under the leg. This helped, but we found that placing posts on the board so that the opposite leg could be straddled was much better. Finally, we tied the foot to the bottom of the board and held the leg in moderate tension. This support affords a positive solid base against which the operator works.

Before the actual operation of bone pinning, there are certain aids which must be employed for the benefit of the operator.

X-ray and Fluoroscope. — First, there should be a record of the location of bone fragments. Ordinary fractures can be examined with the fluoroscope. Unusual fractures need at least one x-ray picture of the lateral aspect of the member, and both a lateral and an anterior-posterior view should be recorded on a film whenever possible. So in consideration of the best work, two pictures should be taken of broken bones, one a lateral view, and the other an anterior-posterior view.

With the aid of these plates, the operator can see the position of bone fragments and visualize what he must do to replace the parts to a normal position. Many veterinarians avoid this procedure and attempt to do good work without these aids. Experience will show that they are entirely in error. They cannot do their best without x-ray plates, and they can collect a sufficient fee to compensate for the additional cost.

Certain unfounded and almost ridiculous notions are maintained in the minds of experienced practitioners. Recently, one made the statement that having an x-ray was completely impractical because it could not be made to pay. When told that certain people considered it a professional misdemeanor to work without x-rays, he replied that he had the use of an x-ray machine but it was so inconvenient to go to his friend, the physician, that he very seldom used it. Going elsewhere for x-ray service is fine if a picture is wanted of a chest, abdomen, or merely to check for a fracture, but if one really wants to work, the machine should be within a few feet of the operating table. It seems rather astounding, but a clinician in one of the large veterinary colleges in the United States confessed that it was deemed advisable to disconnect the fluoroscopic unit from the college x-ray machine used by the students, because there is danger of x-ray burns.

True enough, there are a number of medical men gradually losing their fingers as a result of burns. This condition is excusable for those men who use the old type x-ray with the gas tubes, as usually a hand is held under the screen to test the penetration, but for anyone using a modern fluoroscope, there seems to be little or no excuse for finger burns. Everyone far enough along in a medical school to be around the clinic should be smart enough to realize the danger of long exposure to the rays, and if exposure is necessary, which is usually not the case, there are gloves, aprons, and other leaded materials to give proper protection.

Students are taught to protect themselves from infections of their persons, from danger of chemical explosions in the laboratory, and from bodily injury in the handling of dangerous animals. With all of this precaution many men get kicked, stepped on, or sometimes even killed in accidents with farm animals, to say nothing of the many cases of blood poisoning from bites of smaller animals, yet these things which endanger life itself have not been eliminated from the practical course of study.

The fluoroscope is an extremely important aid in a hospital, and those using it will attest to this point. There is abso-

lutely no reason for a man to get his hands dangerously exposed to the direct rays. In checking a spine, abdomen, or leg, if manipulation is necessary, a leaded glove can be worn. Gloves are cumbersome and one cannot handle small limbs readily, it is true. However, if one desires to look at the hind leg of a cat, for example, and the entire leg is under the screen, a string can be tied to the foot so the hand is well away from the rays.

In our bone pinning cases, we accomplish reduction of fractures by the use of a device which manipulates the broken fragments in all planes. During the process of setting the bone, it is checked several times by the fluoroscope, corrections being made by turning the worm gears while the x-ray machine is turned off. When this method is used, there is no reason to expose the hands to the x-rays. After fixation is complete, a radiograph may be taken for future reference.

Another complaint heard is that pictures must be taken because there is no detail otherwise. It is true that the fluoroscope misses a lot of detail, but on the other hand what detail is needed if you want to see if there is a rock in the bowel, a completely severed spine, or whether a leg is broken?

X-ray pictures are important in offering lasting records, but this again can become a boomerang. The man who demands a picture in the beginning may be asked to show another after he has wrapped up a broken leg in the old-fashioned way. In a vast majority of these so-called sets, it is entirely possible that the first picture could look as good as the last one. A lot of us were quite well pleased with our fracture work when handled by splints and casts until we looked at the bones via the x-ray machine.

SURGICAL PROCEDURE

Preparation. — Surgical preparation of the leg to be operated upon may be considered satisfactory if the following steps are employed:

1) Clip the outside and inside of the member with surgical clippers.

2) Wash with soap and rinse well.

3) Apply ether to inner and outer surface of the leg.

4) Rinse well with alcohol.

5) Apply tincture of zephiran or other suitable tincture to entire leg, inside and outside, several times.

A specially made double cover sheet has been devised for the purpose of properly draping the leg. This is so made that the drape is pulled up between the hind legs against the pelvis and, when in place, the upper part of the drape is pulled up and around the broken member. The object of this drape is to provide protection for the hand of the operator when he finds it necessary to palpate the inner surface of the thigh in order to determine how far the pins have penetrated the bones.

In view of the fact that in veterinary surgery some short cuts are taken, let it be emphasized at this time that no dirty surgery can be practiced when bone pinning is under consideration. This being true, the surgeon must provide himself with equipment by which cloths can be sterilized and used dry. For this purpose an autoclave or an ordinary home pressure cooker can be used. It is all right to boil rubber gloves and use them wet, but it is definitely not all right to boil and use wet cover sheets.

Pinning.—The actual insertion of the pins is difficult to describe. The pins are forced into the bones with a back-and-forth half turn of the wrist (no drill is used). When the proper pin site is located, the pin is plunged through the skin, the pin point placed on the bone, and with slight pressure the point is seated into the bone surface. Next the operator considers proper angulation and alignment of the pin and, when satisfied, inserts the pin through the first cortex of the bone. When the marrow cavity is reached, the pin passes on easily until the inner cortex is reached. At this point, loosen the grip on the pin and pull it out of the hand chuck enough to pass through the bone. As the pin penetrates the entire bone, there is a decided let-up in resistance. Now the operator can feel the point of the pin as it protrudes on the inner side of the bone. Should the pin extend too far through the bone, it is well to retract it so that about ¼ in. protrudes.

After all the pins are in place the following procedure is observed: Single clamps are slipped over the pins. Then a rod is placed in each pair of single clamps, with a double clamp on the rod and between the single clamps.

Each fragment of bone is now firmly held by the pins, clamps, and rods. The next step is actual reduction of the fracture. For this purpose, there is a reduction gear which has two jaws that are attached to the rods mentioned above. This gear is provided with an extension bar, operated at the center, and four worm gears, two at each end, to manipulate

the broken fragments in the two remaining planes.

When the bones are in satisfactory position, a final rod is inserted into the two double clamps, and after all the nuts are tightened, the reduction gear is removed. Thus the gear is free to be used in another case at once and the actual material worn by the patient weighs only about 4 oz.

Anyone interested in bone pinning should provide himself with pins and a hand chuck and practice on cadavers. This is the only way to become acquainted with the "feel" of a pin entering a bone. Almost every bone has a different feel. Old animals have very hard bones as a rule, unless diseased, while young ones are extremely soft. Dogs just over distemper usually have very soft bones. Some diseased bones simply crumble when invaded with pins. This can prove most embarrassing.

The matter of reducing a fractured femur is often complicated by swelling, overlapping, and in many cases there is a long jagged point on one or both fragments. In the latter instance, unless the x-ray shows the exact nature of this point, the operator may find it impossible to get a complete reduction. Where muscle contraction is extreme, it may be wise to place the fragments side by side without complete reduction as to length, since these cases heal readily and locomotion is resumed normally in record time.

Epiphyseal fractures of the distal end of the femur are readily handled by pinning. Pins are placed in the proximal end of the femur and in the proximal end of the tibia, thus spanning the joint. Even when the distal fragment is ½ in. long or less, exact apposition can be provided with spectacular results.

Elbow fractures are handled in a like manner, and while the broken condyles of the humerus are more unruly, they respond nicely to pinning.

Clients often ask how long it takes for a bone to heal. Until individual experience is gained, let it be said that each fracture may require a different time for healing, depending on age, nutrition, previous sickness, and general condition, as well as how the bone is set. For example, a femur set end to end may take longer than one that is placed side to side. We have seen femurs heal solidly in thirty days when well set. In young dogs, tibias heal solidly in three weeks, which is also true of the forearm. The literature states that some femurs require seven weeks, which is a long time. A satisfactory medium for this determination is the x-ray. If careful pictures are taken, bone callous can be seen, and when the callous is sufficiently prominent, only then is it safe to remove the splint and pins. Experience is the best teacher in determining the time of healing.

After care is important. Pins are bound to cut the skin somewhat, so it is our practice to dust a sulfa drug into the cuts daily. If temperature rises above 102 F. we give penicillin every three hours. It is not uncommon for the temperature to rise to 103 F. within twenty-four hours after operation. As soon as the temperature recedes to 102 F. we stop the penicillin. This may seem contrary to accepted methods, but we find it quite satisfactory. Since adopting this procedure, we have not had a single abscess, nor have we had any osteomyelitis.

If there is a question as to the proper time to remove the pin assembly, the fixation rod may be loosened and, if union is not solid, the rod can be replaced. If union is solid, the rods and pins can be removed. In removal of the pins, it is not necessary to administer an anesthetic. Use a pair of pliers, or better, perhaps, the hand chuck, and the pins can be removed with ease. At times there is evidence of pain, but usually little or no attention is paid by the patient during this procedure.

After twenty-five years of small animal practice, during which I have been especially interested in the repair of fractures and luxations, it is my seriously considered opinion that bone pinning must be accepted as an essential part of the treatment of fractures in veterinary medicine.

Sulfonamides for Footrot.—Failure to cure footrot in cows over 1,000 lb. with one injection of 60 Gm. of sulfapyridine sodium may often be attributed to underdosing. Acute cases seldom fail to respond markedly when given 2/3 gr. per pound of body weight of sulfapyridine sodium or 1/3 gr. sulfamerazine sodium. Where a number of steers have been treated, with cost a factor, 60 Gm. of sulfathiazole sodium given intraperitoneally has given good results in steers weighing up to 900 lb.—*Wm. Hartnell, D.V.M., Genoa, Ill.*

NUTRITION

Acute Pulmonary Emphysema of Cattle

F. W. SCHOFIELD, D.V.Sc.
Guelph, Ontario

THIS SUBJECT has been selected not because of its importance as a disease of cattle, but because of its obscure nature and with the hope of making some small contribution toward the pathogenesis of the disease. It is a pasture disease, sudden in onset, afebrile, and characterized by severe dyspnea, the expiratory act usually being accompanied by a short grunt.

GEOGRAPHIC DISTRIBUTION

Due to the meager references in veterinary literature, it is impossible to make an accurate statement with regard to geographic distribution. The first reference to this disease in American veterinary literature was by the writer in the Annual Report of the Ontario Veterinary College, 1924,[1] when it was recognized as a definite disease entity, and an outbreak occurring among calves was reported. W. J. Butler,[2] state veterinarian, Montana, reported outbreaks of acute pulmonary emphysema among cattle in that state. The disease usually appears in the fall of the year, when cattle are removed from the high lands to graze in the lush pasture of the valleys. In England, the disease has been studied by J. R. Barker[3]; it also has been reported from France and Holland. In England, it is believed to be a form of hypersensitivity to some agent in the pasture. This is not surprising as the symptoms closely resemble severe allergic reactions in cattle. Recently, according to reports, acute pulmonary emphysema or panting disease has become widespread and serious in cattle in some of the southern states, particularly Arkansas. This latter condition, however, may not be identical with the one which we are now considering. In Canada, the disease is apparently rare except in one or two counties in the province of Ontario, notably Wellington and Dufferin, where kale and rape are grown extensively for fattening steers and cattle during the fall months. However, isolated cases, and even serious outbreaks, have been seen in widely separated parts of the province. Professor Seekles,[4] Utrecht, has recognized the disease in Holland. It is, however, rare and confined to one comparatively small area.

HISTORY AND SYMPTOMS

The disease almost always occurs in cattle while on pasture. When associated with the feeding of rape or kale, the earliest symptoms usually appear in seven to ten days after feeding has commenced. Occasionally, animals sicken as early as the fifth day and as late as three, or even four, weeks.

The presence of disease in the herd is usually suggested by 1 or more animals standing apart, not eating, with head extended, and breathing with difficulty. Examination reveals accelerated pulse (70 to 90 beats per minute), which is usually associated with tachycardia. In some cases, the heart beat is readily detected by placing the hand on the thorax over the cardiac region. In most cases, the temperature is normal. Peristalsis has either ceased or is slow and feeble. This undoubtedly accounts for the frequency of the obstinate constipation. There may be no passage of feces for several days due to the atonic condition or paresis of the stomachs and intestines. Slight jaundice is commonly present. In some cases, instead of the obstinate constipation, there is fetid diarrhea with frequent flatus. The rumen may contain much or little feed and slight tympany may be present. However, the most characteristic and constant symptom is the severe dyspnea

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From the Department of Pathology, Ontario Veterinary College, Guelph, Canada.

accompanied by a short expiratory grunt. When this continues for two or three days, subcutaneous emphysema may appear in the lower cervical and lumbar regions. The mortality depends upon the severity of the disease and varies from 5 to 35 per cent.

The Mild Form.—A mild form of what we believe to be essentially the same disease has been seen in several herds, and is thought by some veterinarians to be on the increase. The condition always occurs in milking cows when grazing on good pasture. The symptoms are much less severe and the dyspnea of the acute form is not seen. Anorexia, slight acceleration of the pulse and respiration, with marked decrease in milk flow, are the diagnostic symptoms. The rumen is usually atonic and peristalsis diminished, resulting in scanty bowel movements.

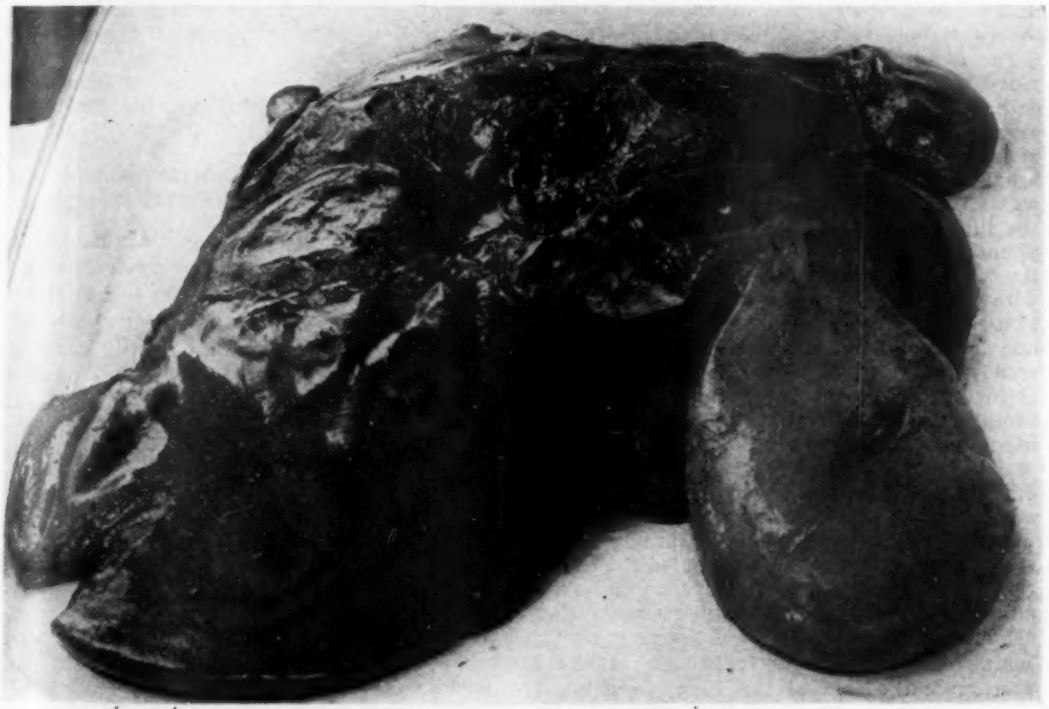
ETIOLOGY

Here, one must speak with caution, although we have formulated a hypothesis which explains some of the cases. There are undoubtedly several factors which have a causal relationship to the disease and complicate the picture.

Feed as a Factor.—The great majority of cases which we have seen have occurred among cattle feeding either on kale, rape, or turnip tops, and has resulted in the designation "rape poisoning" by the farmers. A good description of the types of rape poisoning, of which pulmonary emphysema is the most conspicuous, is given by F. Cote.[5] In some years in the vicinity of Guelph, where rape is widely grown, 100 or more cases may occur with high mortality. But rape and kale are not the only plants which may cause the disease. Serious outbreaks have occurred among cattle feeding on second-growth alfalfa, newly seeded pasture and, in one instance, on weeds in a neglected field. In England, the disease almost always occurs among cattle grazing on newly seeded pasture, or on second-growth grass or clover. In the United States, the disease is related to feeding on low-lying lush pasture.

Succulence.—This undoubtedly is etiologically significant as the majority of cases seen by us or reported by others has occurred in animals feeding on lush pasture or highly succulent plants like kale, rape, or turnip tops.

Climate as a Factor.—This seems to have some bearing upon the incidence of the disease. In some years, especially when there is heavy rainfall and good growing weather, the plants are large and the growth rank, and the disease is more prevalent. The chemical composi-



—Extension Department, Ontario Agricultural College

Liver of cow showing enlarged gall bladder, from a case of acute pulmonary emphysema.

tion of the plant will vary from season to season.

Roughage as a Factor.—For many years farmers have fed hay and straw to cattle when on rape and kale as a preventive measure. There is no doubt that the practice has value. The cattle have a craving for hay and straw and may be seen picking straw out of the manure pile. This would suggest that there is some essential ingredient lacking in the succulent feeds which the roughage supplies. It is doubtful whether the value of the hay and straw can be attributed only to the physical effect of the roughage as some have suggested. We have fed animals for sixteen days on rape alone, with no roughage, without causing any evidence of disease. The exact value of the hay or straw has not been determined. It may be related to the type of flora induced in the gastrointestinal tract rather than to the purely physical effect of the roughage. This craving for roughage has been reported by Gould.[6]

Soil as a Factor.—The fact that the disease occurs more frequently on some farms than on others would suggest that soil had some bearing upon the disease, either due to the ingestion of soil, which readily occurs especially in wet grazing seasons, or indirectly by affecting the chemical composition of the plant. In our feeding experiments, the addition of soil obtained from farms where the disease was present gave negative results. If soil is a factor, it is most probably due to its effect on the chemical composition of the plants.

The Relation to Specific Bacteria.—Some ten years ago when we were puzzling over the pathogenesis of the disease, the lungs and other organs of a cow which had just died (of pneumonia) following difficult parturition, were brought to the laboratory for examination. One was struck by the similarity of the lesions in the lungs with those constantly seen in acute pulmonary emphysema. Every inch of the lungs was congested, edematous, and riddled with large and small pockets of air. Examination of the uterus showed a gangrenous metritis due to *Clostridium welchii*. A critical experiment was carried out using the recently isolated culture of *Cl. welchii*. Toxin was prepared in broth culture, and the filtered product injected night and morning into the peritoneal cavity of a healthy cow for three days. On the second day, the cow showed marked signs of depression and toxemia. On the third day, the respirations were increased to 80 to 90 per minute and a slight grunt frequently accompanied the expiration. The temperature remained normal. The animal was destroyed; at postmortem, the characteristic lesions of acute pulmonary emphysema were present. The toxin had caused congestion and edema of the lung, resulting in dyspnea and emphysema. Numerous fecal examinations made in cases of pulmonary emphysema reveal that *Cl. welchii* is not present in all cases. The enormous increase which may occur in some cases cannot be accounted for by the delayed peristalsis, as the increase has been encountered during the early stage when diarrhea was present, and in other cases where no stasis of the intestine had occurred. These findings suggest that *Cl. welchii* is probably one of several organisms capable of producing a toxin which, when absorbed, causes damage to the capillary bed of the lung followed by edema and emphysema. Even if this hypothesis is correct, a difficult question remains to be answered, *e.g.:* what are the factors which cause the great proliferation of *Cl. welchii* in the intestine?

Relationship of Mineral to Acute Pulmonary Emphysema.—There is a growing belief among both livestock men and veterinarians that there is a direct relationship between the mineral content of the feed and the disease under discussion. The data collected on this important point appear to be contradictory, at least as far as the element phosphorus is concerned. The disease has occurred on farms where the phosphorous content of the plants was high, and again where the phosphorus was low. The same is true of blood phosphorus. The majority of cases do, however, occur in the phosphorous-deficient areas, and cattle have exhibited the symptoms of phosphorous deficiency chewing sticks, stones, and bones—while grazing on rape. It is also of interest to note that in most plants which are related to the disease the ratio between calcium and phosphorus is unusually wide. As already stated, in our experience the disease occurs more frequently on some farms than on others, which suggests mineral deficiency as a possible factor.

ACUTE PULMONARY EMPHYSEMA AS A MANIFESTATION OF AN ENTEROTOXEMIA

The significant finding previously discussed naturally led to the conception of a primary enterotoxemia as the essential etiologic factor. The clinical and pathologic study of the disease adds weight to the hypothesis. Briefly, the evidence may be summarized as follows: (a) In almost all cases there is evidence of enteric disorder such as fetid diarrhea, obstinate constipation, or paresis of the intestine; (b) jaundice indicating damage to the liver; (c) the unusual frequence of flatus indicating digestive disturbance; (d) degenerative changes in the liver; (e) damage to the capillaries in the parenchyma of the lung.

It must be remembered that most of these changes may occur in cattle suffering from severe allergic reactions and one might add that Barker, Gould,[7] and other investigators in England believe the condition to

be an allergic phenomenon. Seekles in Holland considers the disease to be an enterotoxemia.

FEEDING EXPERIMENTS

Among many feeding experiments, two of special significance have been conducted.

Experiment A.—Two nonpregnant heifers and 2 mature cows were purchased on the open market. These animals were stabled and fed an abundance of rape only. Feeding continued for twenty days; all of the animals showed loss in condition and 1 heifer suffered from acute enteritis and hemoglobinuria which terminated fatally. None of the cattle showed any symptoms of pulmonary emphysema.

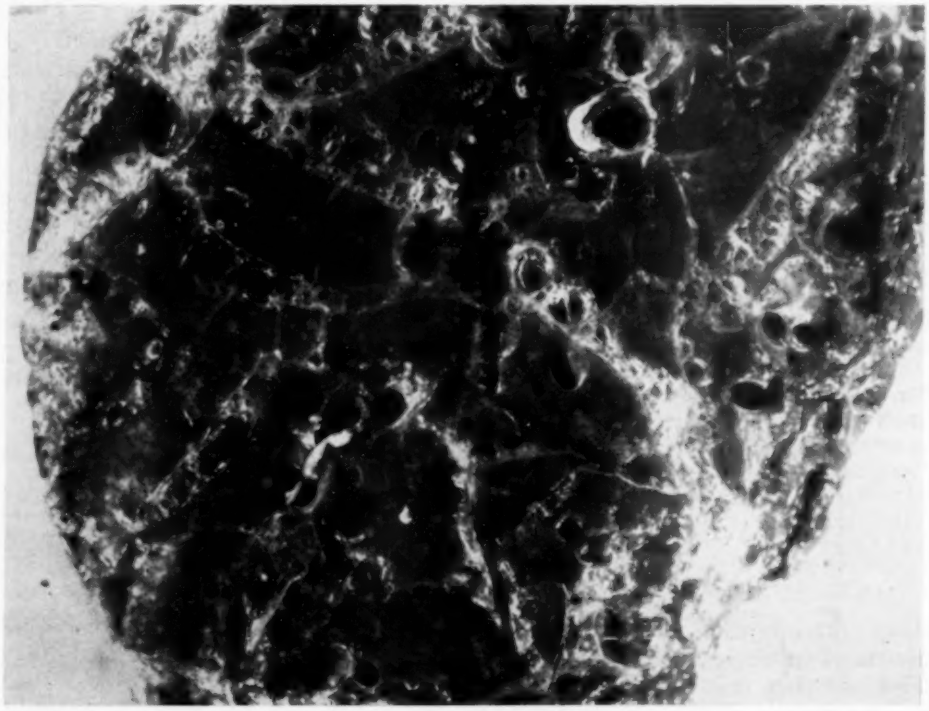
Experiment B.—Eight cows and heifers were used in this experiment. Four were stabled and fed exclusively on turnip tops for sixteen days. The results were negative. These cattle were now removed and placed on farm X, where cases of pulmonary emphysema occur almost every year. After feeding on the rape for one week, 1 of the cows was affected with hemoglobinuria, and in ten days a second showed similar symptoms. In both animals there was a rapid drop in the hemoglobin level. None showed any signs of emphysema. The remaining 4 cattle which had been raised on farm X were purchased from the owner and kept on the farm. Two were fed a small amount of hay daily in the stable and then returned to the rape field. The other 2 were kept continuously on the rape. In five days, 1 of the 2 cows feeding exclusively on the rape developed a severe attack of pulmonary emphysema. Diarrhea was present and *Cl. welchii* were present in enormous numbers in the feces. One of the 2 receiving the hay daily, developed hemoglobinuria on the eighth day. A complete change of feed resulted in recovery in both cases.

It is interesting to note that succulent feed alone failed to cause disease. Similar feed grown and fed on farm X, where the disease was frequent, resulted in both pulmonary emphysema and hemoglobinuria. In other similar experiments we have found it impossible to buy cows in the open market and, by the feeding of large quantities of rape, cause any ill effect save loss in condition.

Note on the Occurrence of Hemoglobinuria.—It is of interest to note that hemoglobinuria in cattle occurs with great frequency when pasturing on kale, rape, and turnip tops, and not infrequently when on second growth alfalfa. We believe this condition is also due to an enterotoxemia. Seekles is of the same opinion.

PATHOLOGY

Gross Pathology.—Lung.—There is no other pathologic condition affecting the lung of the



—Extension Department, Ontario Agricultural College

Lung of cow with acute pulmonary emphysema. Note the congestion, edema, and air in the interstitial tissue

tion of the plant will vary from season to season.

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Among many feeding experiments, two of special significance have been conducted.

Experiment A.—Two nonpregnant heifers and 2 mature cows were purchased on the open market. These animals were stabled and fed an abundance of rape only. Feeding continued for twenty days; all of the animals showed loss in condition and 1 heifer suffered from acute enteritis and hemoglobinuria which terminated fatally. None of the cattle showed any symptoms of pulmonary emphysema.

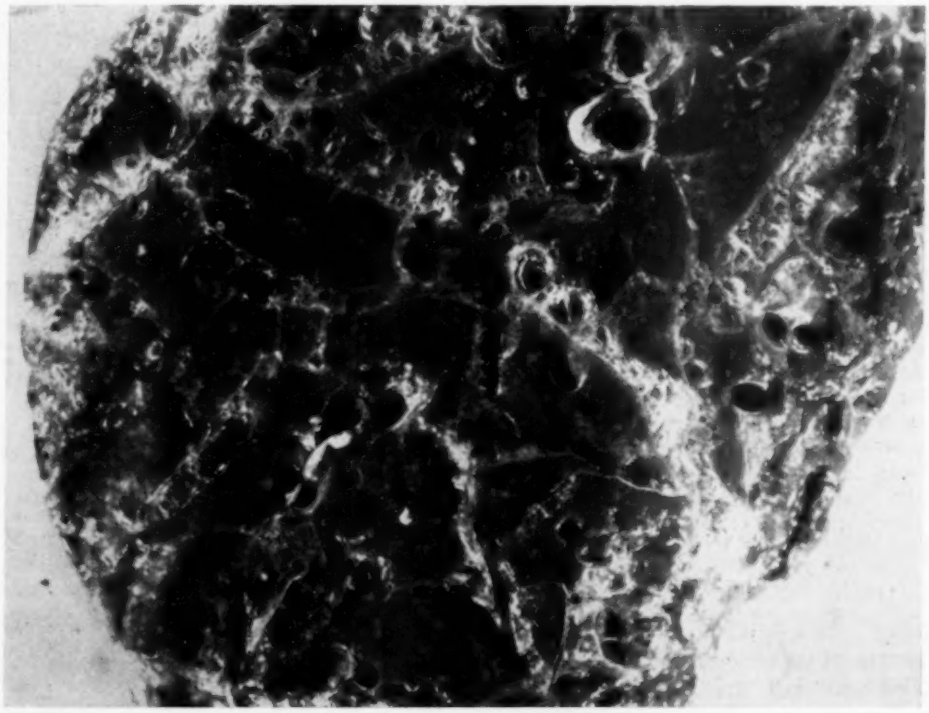
Experiment B.—Eight cows and heifers were used in this experiment. Four were stabled and fed exclusively on turnip tops for sixteen days. The results were negative. These cattle were now removed and placed on farm X, where cases of pulmonary emphysema occur almost every year. After feeding on the rape for one week, 1 of the cows was affected with hemoglobinuria, and in ten days a second showed similar symptoms. In both animals there was a rapid drop in the hemoglobin level. None showed any signs of emphysema. The remaining 4 cattle which had been raised on farm X were purchased from the owner and kept on the farm. Two were fed a small amount of hay daily in the stable and then returned to the rape field. The other 2 were kept continuously on the rape. In five days, 1 of the 2 cows feeding exclusively on the rape developed a severe attack of pulmonary emphysema. Diarrhea was present and *Cl. welchii* were present in enormous numbers in the feces. One of the 2 receiving the hay daily, developed hemoglobinuria on the eighth day. A complete change of feed resulted in recovery in both cases.

It is interesting to note that succulent feed alone failed to cause disease. Similar feed grown and fed on farm X, where the disease was frequent, resulted in both pulmonary emphysema and hemoglobinuria. In other similar experiments we have found it impossible to buy cows in the open market and, by the feeding of large quantities of rape, cause any ill effect save loss in condition.

Note on the Occurrence of Hemoglobinuria.—It is of interest to note that hemoglobinuria in cattle occurs with great frequency when pasturing on kale, rape, and turnip tops, and not infrequently when on second growth alfalfa. We believe this condition is also due to an enterotoxemia. Seekles is of the same opinion.

PATHOLOGY

Gross Pathology.—Lung.—There is no other pathologic condition affecting the lung of the



—*Extension Department, Ontario Agricultural College*

Lung of cow with acute pulmonary emphysema. Note the congestion, edema, and air in the interstitial tissue

cow which resembles acute pulmonary emphysema. When once seen, the picture is never forgotten. All the lobes of the lung are involved in congestion, edema, and emphysema. The lung is heavy, swollen, voluminous, distended, and through the tense pleura may be seen numerous large and small fissures in the parenchyma and interlobular connective tissue which are distended with air. In some cases, large pockets the size of a toy balloon, may be present in the center of the lung as well as innumerable small pockets of air chiefly in the connective tissue. On section, the lung is found to be dark red, firmer than normal and divided into numerous irregular portions due to the widespread interlobular emphysema. Edema is present throughout, which may give a yellowish hue to some areas. Severe congestion is marked and extends through the whole of the lung. The trachea and bronchi contain a blood-tinged, frothy exudate. There is a remarkable uniformity in the pathologic picture; all parts of the lung seem to be equally affected. In this, the lesions are sharply at variance with those seen in pneumonia. Liver.—The liver is always pale and friable and may show a coarse mottling due to large and small areas of degeneration and necrosis. The gall bladder may be greatly distended with viscid bile. Small intestine.—A mild or catarrhal enteritis is present with occasional areas of acute congestion. Petechial hemorrhages may be present. Rumen.—The contents may be a fermenting mass or may be normal. Abomasum.—A catarrhal inflammation is usually present. Kidneys.—Pale and slightly swollen.

Histopathology.—Lungs.—The most striking feature is the very extensive rupture and collapse of the alveoli. Very little normal tissue remains. The capillaries vary, being either engorged or empty. The alveoli contain varying quantities of a serous exudate, and in some areas a slight polymorphonuclear infiltration is present. The bronchi contain a little serous exudate. The interlobular connective tissue is edematous and fissures caused by the entrapped air are common. The picture is very different from that of pneumonia. Kidneys.—Cloudy swelling of the parenchyma is present. Liver.—Extensive areas of degeneration and necrosis may be present around the central vein in some instances; in other cases cloudy swelling is the only change. Small intestine.—The villi show desquamation of the epithelium with necrosis.

SUMMARY

Inquiry reveals that acute pulmonary emphysema of cattle occurs in a number of countries and that the condition is almost always associated with succulent feed. Serious bloating is practically never present, but enteric disorders such as diarrhea, constipation, stasis, or paresis of the intestine are frequent. The clinical picture as well as the gross pathology resembles in many respects the severe allergic reaction occasionally seen following the injection of a foreign protein, but the history of the outbreak lends no support to such a view. The extensive emphysema which may spread from the lung *via* the mediastinum to the cervical region is apparently due entirely to the severe and extensive edema of the lung. Spasm of the involuntary muscle of the bronchioles has not been demonstrated. The terminology of Barker, edema of the lung, is more exact than the use of the term emphysema when the pathogenesis of the disease is considered. The designation emphysema has been employed because of the striking and most unusual spread of air, forming large and small pockets throughout the lung and often beneath the skin—an acute and rapidly spreading interstitial emphysema. The toxins of *Cl. welchii* due to their effect on the great capillary bed of the lung may cause severe edema and a condition almost identical with the disease as it occurs naturally. Feed is a most important factor, especially highly succulent feed and again when animals are limited to such feed. The more restricted the feed the greater the danger of a deficiency, and this may play a part in causing the enteric disturbance which is characteristic of the disease in the early stage. The exact chain of events in the pathogenesis is still undetermined, but the formation of enterotoxins must be kept in mind as a real possibility. The gastrointestinal flora may be seriously altered by the use of succulent and restricted feed.

DISCUSSION

DR. DALE M. SAYLES (Tillamook Oregon): Have you done any differential blood counts?

DR. SCHOFIELD: We made many blood counts in animals last fall. The only change we found was that when they were fed on rape, whether they showed any hemoglobinuria or not, there was a steady decrease in the number of red blood cells; *i.e.*, a slight progressive anemia. There was a slight increase in the monocytes. That is all.

DR. SAYLES: Our count has been above 16 to 17 per cent monocytes, up as high as 52 per cent, most of them running over 30 per cent, so that would fit into that grouping.

DR. C. H. WETTER (Princeton, Minn.): What is the mortality?

DR. SCHOFIELD: That varies anywhere from about 5 per cent to 50 per cent. Five years ago I was told that about 50 animals died in the Guelph area. Just how many cases there were I cannot say, but the veterinarians said it was the worst outbreak they had had for many years.

The mortality is high especially in animals which

are attacked suddenly. In the mild form most of the animals recover; only those which exhibit sudden symptoms of disease die, and these quickly.

DR. WETTER: What are your control measures?

DR. SCHOFIELD: We recommend putting a haystack in the field or seeing that the cows get hay and straw. It may not be of as much value as is believed, but it has been used for many years by the more progressive farmers, and we suggest that they continue.

I have tried the use of adrenalin in only 2 cases. It should be effective, but in these cases it had no value, even when given in large quantities. Especially in cases of constipation, don't give saline cathartics, as it is disastrous; but with oil and molasses, when constipation has been overcome and elimination of the intestinal contents effected, the animal begins to improve right away.

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Iron Metabolism in Pig Anemia

In a comprehensive experiment carried out by Venn and others in England (*J. Comp. Path. and Therap., 57,* Oct., 1947: 314-325), iron was made available to pigs prenatally and postnatally by various means. The purpose was to study its metabolism in baby pigs and to evaluate the relative efficiency of the different means by which it may be provided.

Their results amplified the generally accepted fact that access to sod or soil is the best means of providing iron. Gut washings from a 3-week-old pig given free access to soil yielded 513 mg. of the mineral, —or almost seven times the daily amount fed medicinally to other pigs in the study. On the basis of the iron content of the soil (about 1.5 Gm. per 100 Gm.), it was concluded that the pig had ingested at least 40 Gm. of soil to obtain the 513 mg. of iron.

Other divisions of the experiment showed that the body of the pig contains about 50 mg. of iron at birth and that the pig must retain about 7 mg. per day to grow at a normal rate without becoming anemic. The milk of the sow cannot be expected to supply over 1 mg. daily. Dosing lactating sows had no effect on the iron content of their milk.

When iron was administered during the first three weeks of life, the pigs consumed more milk and grew faster, and there were higher concentrations of the mineral in the blood, liver, and rest of the body. In contrast, dosing sows during pregnancy did not appreciably alter the size or composition of their offspring. The amounts of iron found in the liver at birth were insufficient to contribute materially to body requirements during the first three weeks of life.

Anasarca in Beef Cattle Due to Vitamin A Deficiency

Losses due to anasarca (generalized edema) in Corn Belt beef cattle were shown by Madsen and Earle (*J. Nutr., 34,* Dec. 10, 1947: 603-619) to be due to the feeding of low-carotene roughage. Their finding does not imply that the economical practice of feeding low-carotene roughage, such as ordinary cereal hay, should be discouraged; rather, it points to the need for providing a supplementary ration of well-cured green hay, not over one year old, to avoid possible vitamin A depletion in the late part of the feeding period. Well-made silage, green pasture, or cod liver oil undoubtedly would be just as effective.

U. S. BAI figures cited by the authors show that from 1941 through 1946, over 650 beef carcasses were condemned for anasarca by federal inspectors. In addition, there were unestimated losses due to trimming in carcasses only partly affected. Moreover, many cases probably recovered before slaughter, through timely changes in the ration, while others died on farms or in transit.

At one time, the feeding of stored corn was thought to be the cause of this disease. Apparently, that theory is untenable since, in the present study, anasarca as well as other symptoms of vitamin A deficiency developed even when corn of the current season's crop was fed. This led to the conclusion that corn cannot be depended upon to supply enough carotene to satisfy the vitamin A needs of cattle.

Numerous studies indicate that it is economically unsound to feed cows massive doses of vitamins to augment the nutritive value of their milk.

EDITORIAL

Teaching Veterinary Medicine to the Laity

Once upon a time, veterinarians with rare exceptions protested passionately against the release of any of their "secrets" to the laity for the openly declared reason that it took a cut from their "business." The protests by "pen and pulpit" were continuous and real.

Just after the turn of the century, for example, the Iowa association revoked the honorary membership of a teacher (A. T. Peters) at a neighboring state university for getting too chummy with the farmers and, about the same time, the Michigan association disciplined its president (H. F. Palmer) for answering queries for a local farm paper.

In Illinois, although the teachers of veterinary science at the state university (Prentice, McIntosh, *et al.*) founded and took active part in the state association, the openly expressed opposition to their work abolished their influence within the organization.

James Law who succeeded by long effort to found a veterinary faculty of the upper ranks was pecked at for his *Farmer's Veterinary Adviser* and sympathetic relations with the livestock farmers of a great state.

The Missouri Valley association expelled J. W. Connaway from its membership on the same general grounds, yet he lived to see a faculty of veterinary medicine established in his work shop.

We've heard diatribes thrown at F. B. Hadley and A. S. Alexander in Wisconsin for their coöperation in the handling of animal-disease problems in that state.

A. H. Baker, founder and longtime dean of the Chicago Veterinary College, was lashed right and left for being one of the co-authors of a popular book on the diseases of farm animals. In 1904, the Michigan association passed a resolution of the "whereas and resolved" type denouncing "Pa" for "injustice to the great mass of the profession."

All the while, no adjective was too impolite to use in chastising the government for daring to circulate books and bulletins for the edification of farmers on the care and treatment of their animals.

The whole truth about the prevailing attitude in this connection was never published. For that, one has to recall the unpublished discussions of the subject at association meetings and private conversations with the allegedly injured practitioners.

Search for the cause of what seemed to be abnormal professional behavior always leads straight to the same fundamental cause, namely, the failure of the country to establish formal veterinary education of sufficient capacity under public support, thereby allowing unmanaged private colleges to attract a personnel on the argument that veterinary practice was a "good business." That being true, the bulk of veterinarians who came into the profession up to the beginning of the third decade of the twentieth century were lured into a "business." The thought of cultivating the idea that veterinary practice was a public service which all who enter are obligated to honor *per se* was, and still is, slow to get installed into the educational system. In retrospect, it is incontrovertible that the practitioners (scores of whom are still practicing) resented the invasion of the inadequate type of veterinary medicine that the public was offering the livestock industry through the agricultural colleges. A fact the JOURNAL has tried to emphasize for the edification of all concerned is that, until the 1920's there was little in sight to insure that the government (states) would ever provide the people with a competent and sufficient veterinary service, after defaulting for a century and a half. The practitioners' protests against teaching veternary medicine to the laity was, therefore, the expression of a *bona fide* effort to build up a competent profession and by no means all the personal selfishness that might be ascribed to it.

Now, with a competent educational sys-

tem looming in sight, teaching veterinary medicine to the laity has taken different form. The profession is now proud of the fine articles its members are writing for the farm papers, the fur-farming magazines, and the newspapers. What was once thought harmful is now called excellent publicity. Books are being written which more definitely establish the point at which the stockman and veterinarian should meet to the benefit of both. For the most part, the farmers look more to the extension services of the universities rather than to the farm press for guidance on matters of a veterinary medical nature, with the veterinarians coöperating—except in obnoxious traffic in medicinal products and the teaching of veterinary medicine to the laity by commercial interests. The latter, on close analysis and comparison, is obviously the greatest threat that has ever been faced by the clinical branch. It puts drugs and literature describing their use in the drug store, prods druggists to indulge in unethical practices, and employs technicians high up in the veterinary profession to develop a system of clinical medicine entirely over the heads of the legally authorized practitioners. By comparison, teaching veterinary science to agricultural students while all minds were groping toward the present setup was but a tempest in a teapot. The drug-trade traffic in veterinary products is a big swing in the wrong direction and spells no good for the veterinary profession, the livestock industry, the public health service, or the country itself.

Titles and Headlines

Protests, varying from mild to strong, against changing the titles of material received for publication occasionally arrive from the authors. The objections are not always well grounded. Long titles which consume space unnecessarily are sometimes shortened and short ones without definite meaning are lengthened. The reason is always the same. The title has to be indexed in such a fashion that the article will not be forever lost in the deluge of published material. The other day there was occasion to consult a series of articles on ovine variola, a grievous sheep plague of the nineteenth century in continental Europe, which was known to have been published in the *American Veterinary Review*. It was found indexed in the June 1878 issue under the title "A Contribution" by F. S. Billings! That, in a word, is self-explanatory.

Brucellosis, the Livestock Problem

Brucellosis (under the name of "Bilious Intermittent Fever of the Mediterranean Area") was first studied in 1814 by an English physician. During the Crimean War (1855), British soldiers were stricken with "a peculiar intermittent fever" now believed to have been brucellosis. It is estimated that there are now upward of 35,000 human cases in the United States each year, although fewer than one-tenth of them are recorded by public health agencies.

Cattle, swine, horses, and goats are natural reservoirs of the specific organism. From 15 to 20 per cent of the herds are infected. The financial losses suffered in the U. S. A. are estimated at $50 million for cattle and $10 million for hogs, annually. Ultimate and complete victory over brucellosis (*Ill. Health Messenger*, June 16, 1947) lies in its elimination in livestock. It is rarely, if ever, transmitted from man to man and, therefore, is a problem for the veterinary service to handle. Says *Hoard's Dairyman* (July 10, 1947) in discussing human brucellosis: "There is no sense in burying our heads in the sand and failing to recognize the problem we face. We faced TB eradication and the industry profited."

To the livestock sanitary field, there is a great difference between brucellosis and tuberculosis. By and large, the one raids the human victim by stealth, whereas, the other stirs up the conscience by staging the horrendous scene of a lingering fatal illness among the precious adolescents of many a family circle. To appease public alarm and safeguard its own economy, the world's agricultural interests, led by Robert Koch himself, protested against making animal tuberculosis a public health problem. To counterbalance in part the lack of general public interest in the eradication of brucellosis is its exclusive animal origin.

"The Golden Gate in '48"

CURRENT LITERATURE

ABSTRACTS

Influence of Hard Work and Poor Feed on Fetal Development

In 1942, the Germans, in building highways, used Polish horses including pregnant ones at hard work. Instead of oats, or at least rye, to which Polish horses were accustomed, the Germans fed them only chopped straw (sieczka) and at times some potatoes. The result was many abortions. During 1943 the author had to handle 18 cases of dystocia. The foals showed such deformities of the neck as contorsio and curvatura lateralis facialis capitis congenita. Most of the cases had to be delivered by embryotomy.—[*Roman Hoppe: Wplyw ulozenia glowy i szyi na ksztaltowanie sie kosci czaszki u plodow konskich i plynace stad wskazania dla rozwiazywania ciezkich porodow u klaczy. (The influence of the Position of the Head and the Neck upon the Formation of the Skull Bones of the Equine Fetus and the Resulting Indications in the Management of Dystocia of Mares.) Medycyna Weterynaryjna, 3, (July, 1947): 474-478.*]—L.I.H.

Blood Pressure Determination

For the determination of blood pressure in domestic animals, the sphygmo-oscillometer and the sphygmograph were used. The auscultatory and palpatory methods and aneroid instruments were rejected. Arterial pressure in the large animals was observed by means of a standard rubber cuff applied to the root of the tail. For the dog, the cuff was applied to the pectoral limb. Venous pressure was taken by the direct method from the jugular and the external thoracic veins.

Normal systolic pressure in the horse was 100 to 120 mm. Hg. Physiologic deviations of ± 10 mm. occurred. Diastolic pressure was 25 to 50 mm. Hg. Normal jugular venous pressure was 80 to 130 mm. H_2O.

Increased arterial tension was seen in various compensated heart diseases, painful conditions, indurated kidney, sympathicotonia, and several forms of intoxication. Hypotension was rare in the horse, being observed in infectious anemia, decompensated cardiac myodegeneration, and cachexia. A pulse pressure of less than 40 mm. Hg. suggests an unfavorable prognosis.

Jugular venous hypertension (150 to 400 mm. H_2O) was observed in degenerative and dystrophic myocardial disease. Venous hypotension (3 mm. H_2O) occurred in pneumonia.—[*I. G. Sharabrin: On the Method and Apparatus for Clinical Determination of Arterial and Venous Pressure. Veterinariya, 24, (July, 1947): 27-30.*]—R.E.H.

Diarrhea in Suckling Pigs

The disease was observed in the Krasnoyarsk district of Siberia, on four swine farms where the housing and sanitation were inadequate. The pigs, 3 to 35 days of age, voided small quantities of gaseous, fetid, yellow or grey, liquid feces. Autopsy and bacteriologic findings were negative. Results of treatment are tabulated:

Method	Early treatment No. treated	Early treatment % recov.	Treated 36 hr. after onset No. treated	Treated 36 hr. after onset % recov.
Citrated maternal blood 5-10 cc. IM, repeated in 48 hr. (Bled from tail)...	177	100	80	100
Castor oil, bismuth subnitrate, salol, tannalbin	96	84.4	54	61.1
Castor oil, ichthyol, bismuth subnitrate.	160	81.3	45	58
Sour milk with added lactic acid...	270	91.8	45	44.4
"Sulfidine" and caffeine	96	93.8	39	56.4

—[*A. I. Noskov: Treatment of Diarrhea in Suckling Pigs. Veterinariya, 24, (July, 1947): 15-16.*]—R.E.H.

Treating Tetanus without Antitoxin

During forty years of practice, the author has observed many cases of tetanus treated too late because the owners of the horses have failed to suspect the disease. Because tetanus antitoxin was frequently not available, the following treatment was used and in several cases was successful: (1) gastric lavations with a mixture of 2.5 liters of boiled water and 0.5 liter of 3 per cent H_2O_2—performed every second day until recovery; (2) glycerin and carbolic acid (8 Gm. of each) given intravenously every day.

An editorial remark indicates that both medications have already been reported in veterinary literature; the results were inconclusive.—[*Z. Olszanski: Przypadki wyleczenia tezca bez stosowania surowicy. (Cases of Tetanus Successfully Treated without Antitoxin.) Medycyna Weterynaryjna, 3, (March, 1947): 175.*]—L.I.H.

Hemolytic Substance in the Serums of Horses with Dourine

The authors have found a new hemolytic substance in the active serums of 48 out of 53 Japanese horses naturally infected with dourine in Manchoukuo. The serums contained this hemolytic substance in dilutions from 1 : 40 to 1 : 2,560 and were completely absorbed by trypanosomes, while the immune hemolysin in the serums of rabbits which were immunized either with the cow erythrocytes or the kidney emulsion of guinea pigs was not absorbed.

This specific substance is thermolabile and is completely destroyed by heating at 56 C. for thirty minutes.—[*S. Kitajima: Specific Hemolytic Substance in the Serums of Horses Infected with Covering Disease (Dourine). Jap. J. Vet. Sci., 4, (1942): 597.*]—K.F.B.

Lesions Caused by Metal in the Reticulum of Cattle

Through symptoms revealed in the history and by examination, the author was able to diagnose this condition in 231 animals. Of 214 operated upon, the diagnosis was confirmed in 191 cases: 5 of these had tuberculosis, 6 had acclimatization disturbances, and 4 osteomalacia. There were 2 cases of distomiasis and 6 cases of intestinal obstruction.—[*W. Wislocki: Diagnozowanie schorzen powstalych przez metaliczne ciala obce w czepcu u bydla oraz operacyjne ich leczenie. (Diagnosis of Lesions Caused by Metallic Foreign Bodies in the Reticulum of Cattle and Their Surgical Treatment.) Medycyna Weterynaryjna, 3, (June, 1947): 404-409.*]—L.I.H.

Experimental Infection of the Rabbit with Rinderpest Virus—Complement-Fixation Reaction

A specific antibody which gave a complement-fixation reaction with the extract of rinderpest-infected tissues was demonstrated in the serum of a rabbit which had recovered from an infection of the same virus.

The first appearance of antibodies was demonstrated in the serums collected on the eighth day following exposure. Fixation activity increased thereafter. All serum specimens obtained after ten days through nineteen days gave a strong positive reaction.

Infected tissues belonging to the lymphatic system, such as lymph gland, spleen, and thymus, and those of the intestinal mucous membranes, those of cecum and jejunum, were in the author's opinion capable of exhibiting antigenic activity and reacted specifically with the convalescent rabbit serum as well as calf serum.

The results of tests with other types of tissue were completely negative or indefinite.—[*J. Nakamura and Y. Goto: Experimental Infection of the Rabbit with Rinderpest Virus. IV. Complement-Fixation Reaction. Jap. J. Vet. Sci., 3, (1941): 283.*]—K.F.B.

Equine Paratyphoid Due to Salmonella Abortivoequina

Of 11 Chosen ponies employed for the experiments, 6 were injected intravenously, 2 subcutaneously, and 3 orally inoculated. These animals were examined bacteriologically, serologically, clinically, and pathologically.

Bacteriologic examinations were carried out with the blood, urine, feces, and nasal discharges, while the serologic examinations were made through agglutination and complement-fixation tests.

The authors observed (1) a febrile reaction which tended to turn to an irregular fever of a remittent type, (2) the serologic response, an especially marked agglutination, (3) a bacteremia and an excretion of organisms by the kidneys, and (4) a proliferative type of reaction in the liver portraying typhoid nodules consisting of histiocytes, adventitia cells, and mesenchymal tissue.—[*S. Namikawa: Experimental Studies on Equine Paratyphoid Due to Salmonella Abortivoequina. Jap. J. Vet. Sci., 5, (1943): 205.*]—K.F.B.

Infectious Anemia Virus in Manure

Horse manure, removed from the stable within three to five days, piled loosely, and covered with 10 cm. of earth, reached a temperature of 140-172 F. and maintained it for ten to fifteen days. Atmospheric temperatures of —13 to —22 F. did not affect the temperature of the manure at a depth of 25 cm. This temperature was sufficient to destroy equine infectious anemia virus absorbed in cotton and buried for thirty days in the pile. The filtrate from the cotton was tested by inoculation of 4 foals. The animals remained clinically healthy for an observation period of three to five months. At the end of this time, histologic examination of liver biopsy material was negative. The animals were then inoculated with the original strain of virus. All died. Manure which was allowed to undergo partial decomposition in the stable did not attain a virucidal temperature. Virus buried in this manure was lethal to 3 foals.—[*L. Pyanikov: Biothermic Destruction of the Virus of Infectious Anemia in Horse Manure. Veterinariya, 24, (June, 1947): 25-29.*]—R.E.H.

The Blood Potassium and Calcium Levels of Cattle Grazing Wheat

Analyses were carried out to determine the plasma potassium content and serum calcium content of (1) normal dairy cattle, (2) cattle showing symptoms of tetany subsequent to grazing wheat, and (3) cattle grazing wheat but showing no tetany. The average calcium con-

tent of the serum of normal dairy cattle was 10.9 mg. per 100 cc., with variation from 10.4 to 11.9 mg. per 100 cc. The potassium content of the plasma of these animals averaged 16.7 mg. per 100 cc. The ratio of plasma potassium to serum calcium (K/Ca) averaged 1.53. The average calcium content of the serum of cattle showing tetany was 5.3 mg. per 100 cc. and varied from 3.3 to 6.6 mg. per 100 cc. The average plasma potassium content of these animals was 16.1 mg. per 100 cc, and varied from 9.6 to 26.6 mg. per 100 cc. The average K/Ca ratio was 3.04. The average calcium content of the serum of cattle grazing wheat but showing no tetany was 9.3 mg. per 100 cc. and varied from 8.8 to 10.0 mg. per 100 cc. The average potassium content of the plasma of these animals was 18.6 mg. per 100 cc., varying from 15.7 to 21.3 mg. per 100 cc. The average K/Ca ratio was 2.00.—[*F. G. Harbaugh and Joe Dennis: The Blood Potassium and Calcium Levels of Cattle Grazing Wheat. Am. J. Vet. Res., 8, (Oct., 1947): 396-399.*]

Diet and Hookworm Disease in Lambs

A pair of lambs on a good diet (alfalfa hay and grain) and a pair on a poor diet (chiefly timothy hay) were infected experimentally with *Bunostomum trigonocephalum*. One member of each pair was exposed to about 50,000 infective larvae and the second member of each pair was exposed to about 139,000 infective larvae of that hookworm species. The larvae, derived from cultures of the feces of sheep that had been experimentally infected with Bunostomum only, were administered serially by skin, commencing when the lambs were about 2 months old and just weaned. Administration of the larger number of larvae was spread over a 38-day period, but the smaller number was given within one week. The course of the infections and the health of the lambs were determined by means of standard helminthologic and hematologic techniques and clinical observations.

Extreme anemia developed in both lambs on the poor diet and caused their death. The one exposed to 50,000 larvae died fifty days after infection and yielded 4,641 hookworms. Its dietary mate was slaughtered *in extremis* eighty days after infection and yielded 1,663 hookworms. A pair of uninfected controls on the same diet showed no anemia in eighty days.

The infected pair on the good diet also became anemic, but only moderately so. They not only survived, but about seven months after infection their red-cell values had nearly regained normality. The minimum hematocrit reading for the lamb exposed to 50,000 larvae, which yielded 1,331 hookworms 224 days after infection, was 20.75 per cent. The minimum for its dietary mate which, when slaughtered at the same time, yielded 612 hookworms, was 23.0 per cent. Anemia developed more rapidly in the former than in the latter lamb. A control pair on the same diet did not become anemic.

Within each dietary group, difference in exposure to infection obviously affected the intensity of the subsequently induced anemia, speed of development, as well as minimum red-cell values ultimately recorded, being regarded as an index of intensity. However, diet was regarded as the determinant of the differing severity of the hookworm disease induced in the lambs equally exposed to infection.

Details of the data were considered to suggest that diet affected both susceptibility to infection and ability to compensate for blood loss. Compared with the good diet, the poor diet was deficient in protein, iron, calcium, and certain vitamins.—[*John T. Lucker and Eleanor Neumayer: An Experiment on the Relationship of Diet to Hookworm Disease in Lambs. Am. J. Vet. Res., 8, (Oct., 1947): 400-412.*]

Intracutaneous Brucellosis Tests in Cattle

A nonagglutinogenic hydrolyzate prepared from *Brucella abortus* (BH) was studied from the standpoint of detecting allergic skin sensitivity in cattle. When used on herds with brucellosis of long standing, of 190 animals with positive agglutination titers, 54.7 per cent were negative to the intracutaneous injection of BH; while of 177 cows negative to the agglutination test, 24.8 per cent yielded positive or suspicious skin reactions. The results obtained with BH correlated closely with those observed with the use of sonic filtrate of *Br. abortus* (SF) on the same animals.

When the intracutaneous test with BH was applied to herds under the test-and-slaughter method for the eradication of brucellosis, all cattle negative to the agglutination test were devoid of allergic skin sensitivity; while of 14 animals with positive or suspicious serologic titers, 9 were negative to the skin test.

Animals vaccinated during calfhood with strain 19 appeared to retain an allergic skin sensitivity in a considerable percentage of cases at a time when their blood serum titers had returned to a negative status.

The reactions produced by the intracutaneous injections of BH were specific because no animal with a negative history and negative to the agglutination test was positive to the skin test. However, because of the discrepancies between the results of the serologic and the intracutaneous tests, the latter cannot be relied upon to diagnose individual cases of brucellosis. The allergic skin test with the nonagglutinogenic BH might be of value in surveys to detect animals that have been in contact with infected sources.—[*I. Live and E. L. Stubbs: Intracutaneous Brucellosis Tests in Cattle. Am. J. Vet. Res., 8, (Oct., 1947): 380-385.*]

BOOKS AND REPORTS

Veterinary Entomology and Helminthology

This is a laboratory guide to veterinary parasitology, and it emphasizes the distinguishing features of the several parasites which it discusses. It is a departure from the older types of student notebooks in the presentation of correct drawings of the parasites on pages reproduced by the photo offset method.

Although prepared for student use, and therefore not adapted to the most convenient use as a diagnostic aid in practice, it does present the identifying features of many insects, ticks, mites, flukes, tapeworms, and roundworms. The book deals more with the classification and taxonomy of parasites than with the ready recognition of parasitisms as they are presented to a practicing veterinarian.—[*Illustrated Laboratory Outline of Veterinary Entomology and Helminthology. By J. H. Whitlock. 87 pages (8½ by 11 in.) of which 32 are photo offset. Mimeoprint, spiral ring binder, paper cover. Burgess Publishing Co., 426 South Sixth Street, Minneapolis 15, Minn. 1947. Price $3.00.*]

Veterinary Surgery Notes

A terse discussion of the surgical conditions which confront the general practitioner, the book furnishes an equally concise description of the technique to be followed in correcting such of these as are operable. Beginning with a chapter on anesthesia, the author next discusses the technique of surgery with a consideration of such items as preparation of the hands and of the operative field, sterilization of instruments, and selection of the type of suture to be used and the kind of knot which will serve most effectively. Then comes a chapter on restraint in the various species of animals, restraint which protects both the animal and the surgeon from injury and unnecessary exertion.

After a series of chapters on fractures, dislocations, wounds, neoplasms, and cysts the book deals with surgical problems as they appear on the various parts of the body. This helps greatly in making a differential diagnosis, and is of particular value to the veterinarian in practice who must balance all factors as promptly as possible and then decide on a course of action.

By printing the book with the photo offset method, it can be revised as frequently as seems advisable. Originally published in 1939 this volume was revised in 1942, 1944, and 1947. It embodies the information sought by the practitioner, and it describes operations which can be used under farm conditions by every veterinarian who remembers or will review his anatomy and histology.—[*Veterinary Surgery Notes. By E. R. Frank. Cloth, 272 pages (8½ by 11 in.). 252 illustrations. Photo offset print. Burgess Publishing Co., 426 South Sixth Street, Minneapolis 15, Minn. 1947. Price $5.00.*]

Veterinary Bacteriology

The book is divided into three parts. Part One comprises 16 laboratory exercises in general bacteriology to teach the fundamentals of correct technique, types of bacteria and of mediums, and the action of antibiotics. Part Two consists of 17 exercises on the principles of immunity, the production of antibodies, and the conduct of agglutination, precipitation, and complement fixation tests. Part Three (23 exercises) deals with the pathogenic bacteria, with emphasis on those of veterinary importance.

Detailed description is omitted, but a list of reference sources, books and periodicals, is presented for supplementary reading. This is prepared for use as a laboratory manual and is not intended for use in connection with veterinary practice.—[*Laboratory Manual for Veterinary Bacteriology. 5th edition. By I. A. Merchant, R. A. Packer, and E. H. Coles. 82 pages (8½ by 11 in.) with numerous blank pages for classroom notes. Photo offset print. Paper cover, spiral ring binder. Burgess Publishing Co., 426 South Sixth Street, Minneapolis 15, Minn. 1947. Price $2.75.*]

Annual Report, Montana Livestock Sanitary Board

In Montana for the year ended Nov. 30, 1947, there was only 1 reported case of rabies (in a horse) and that appeared to have been contracted in another state. It was the first case reported in any species of animal in the state since 1925. There were no confirmed cases of tuberculosis in cattle, neither was there any swine brucellosis, nor glanders, dourine or periodic ophthalmia, anthrax or anaplasmosis, or sheep scabies. On the other side of the ledger, bovine brucellosis, equine encephalomyelitis, bovine sarcoptic mange, pulmonary emphysema, pododermatitis, urinary calculi, infectious keratitis, calf pneumonia, internal parasites of sheep, and Newcastle disease were troublesome throughout the state.

These facts are brought out in a well-worded report by Dr. W. J. Butler, state veterinarian and executive officer of the Montana Livestock Sanitary Board, revealing that Montana stockmen had an exceptionally prosperous year, thanks to "healthy, vigorous animals, good prices and good grass." While the report gives just cause for optimism, it also warns that there can be no complacency in dealing with livestock health problems shadowing the future. If Montana's livestock interests are to

enjoy continued prosperity, there must be advanced research on the control and eradication of costly diseases—paid for by the livestock industry if state and federal appropriations cannot be obtained. Dr. Butler also points out that it is becoming increasingly difficult to get capable veterinarians for state positions, mainly because private practice is more lucrative. Another problem facing the state is in obtaining promising young men trained in veterinary medicine. It has no veterinary school of its own and existing schools are so crowded that they can accept only a few qualified Montana applicants.—[*Report to the Montana Livestock Sanitary Board. Dec. 1, 1946, to Nov. 30, 1947. By W. J. Butler, executive officer. Mimeograph. Helena, Mont., Dec. 1, 1947.*]

Report of the New York State Veterinary College, 1947

Published in obedience to the Laws of 1897, the Report summarizes the activities of the semicentenary of United States' initial experiment in higher veterinary education, following precisely the forty years of sketchy groping by private and public attempts to provide a competent veterinary service for the world's biggest livestock empire. Although there is nothing deader than yesterday's newspaper, there can be no rubbing out the thirty years of tireless effort on the part of James Law to erect this monument along the way from the "no-veterinary-school period" to the present time.

The report of President Edmund E. Day to the Board of Regents of the University of the State of New York is the orthodox, fiscal generality. The report of Dean W. A. Hagan of the veterinary faculty gives to President Day the details of the present curriculum, its teachers, methods, and installations; and recounts the activities of the 50-year-old school, which differs in important respects from its contemporaries. The long list of nonresident instructors representing the major branches of veterinary medicine, for example, is a departure entirely too long postponed in American veterinary education. Who is better qualified to teach than he who has won distinction by merit in his own horizon? The Cornell faculty for the year reported brought in Beaudette (N. J.), Dikmans (BAI), Henderson (Ill.), Krill (Ohio), Gassner (Colo.), Taggart (U. S. Army), Taylor (Eng.), and a number of clinicians representing various branches of practice.

The clinic, expanded 50 per cent in recent years, used 30,250 animals of which 19,930 were cattle, 3,539 dogs, 2,755 hogs, 1,685 small ruminants, 1,385 solipeds, and 900 cats.

The experiment station made 805,620 cc. of Brucella antigen and the pathologic laboratory examined 8,763 specimens submitted for diagnosis. Many research projects covering a wide field are under way.

The student enrollment for 1945-1946 was 120; for 1946-1947, 130; and for 1947-1948, 160. Beginning with the fall of 1948, the schedule will revert to the usual four classes in lieu of the wartime accelerated program with its scattered dates of admission.—[*Report of the New York State Veterinary College at Cornell University. Edited by W. A. Hagan, Dean. 150 pages. Illustrated. The Humphrey Press, Inc., Geneva, N. Y. Public document.*]

Experimental Pharmacology

This book is a series of laboratory exercises for veterinary students in pharmacology. The study comprises pharmacognosy, materia medica, pharmacy, pharmacodynamics, therapeutics, and toxicology. The laboratory study proceeds through the various organ systems of the animal body.

A valuable aid to the practitioner who has filled in all of the information and has answered all of the questions as he worked his way through the course, but of little help to the veterinarian already in practice—for whom it was not intended.—[*A Laboratory Manual of Experimental Pharmacology for Veterinary Students. Revised. By B. V. Alfredson. 156 pages (8½ by 11 in.), photo offset printing. Paper cover, spiral ring binder. Burgess publishing Co., 426 South Sixth Street, Minneapolis 15, Minn. 1947. Price $2.75.*]

Microscopic Anatomy and Embryology

This laboratory notebook is arranged for lecture notes to be entered at the appropriate places so that they will be readily available while the laboratory study is made. Lectures, laboratory exercises, and textbooks do not supplant each other; rather they supplement each other when they are used to best advantage.

This laboratory manual deviates somewhat from older teaching methods in so far as sketches by the student are concerned. Instead of depending upon the artistic ability of each student, outline drawings are reproduced in such a way that the student can add the details as he finds them in the course of dissection.

The author discusses the correct histologic technique, the types of cells and the types of tissues, and then the organ systems. All of this is strictly from the standpoint of the teacher and his method of imparting knowledge to the student.—[*Lecture Outlines and Laboratory Guide for Veterinary Microscopic Anatomy and Embryology. Revised. By H. L. Foust. 148 pages (8½ by 11 in.), mimeoprint, with blank pages for lecture notes and outline sketches for laboratory use. Paper cover, spiral ring binder. Burgess Publishing Co., 426 South Sixth Street, Minneapolis 15, Minn. 1947. Price $3.00.*]

THE NEWS

U. S. Committee Appointed for Fourteenth International Veterinary Congress

The next International Veterinary Congress will be held in London in 1949 as decided by the Permanent Commission at meetings held last year. The exact dates have not yet been determined.

AVMA President W. A. Hagan has appointed a committee to represent the United States in helping plan the London meeting. The members are:

Dr. G. H. Hart, University of California, Davis, *chairman*.
Dr. J. G. Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, *secretary*.
Dr. Adolph Eichhorn, New York, N. Y.
Dr. W. A. Hagan, New York State Veterinary College, Ithaca.
Dr. C. C. Hastings, Williamsville, Ill.
Brig. Gen. J. A. McCallam, Veterinary Division, Surgeon General's Office, Washington, D. C.
Dr. J. R. Mohler, Washington, D. C.
Dr. B. T. Simms, BAI, Washington, D. C.
Dr. H. W. Schoening, BAI, Washington, D. C.
Dr. R. L. West, State Livestock Sanitary Board, St. Paul, Minn.

Prof. E. Leclainche of the International Office of Epizoötics, Paris, is president of the Permanent Commission of the International Veterinary Congress; Dr. J. R. Mohler is vice-president; and Prof. L. de Blieck, State University, Utrecht, The Netherlands, is secretary-treasurer. The last congress was held in Zurich, Switzerland, in 1938, World War II having prevented the session scheduled for Berlin in 1942. Except for interruptions caused by war, the International Congress has met at rather regular intervals since it was first organized in 1863 by Professor John Gamgee of England, as shown in the following table:

Congress	*Place*	*Year*
1st	Hamburg	1863
2nd	Vienna	1865
3rd	Zurich	1867
4th	Brussels	1883[1]
5th	Paris	1889
6th	Berne	1895
7th	Baden-Baden	1899
8th	Budapest	1905
9th	The Hague	1909
10th	London	1914[2]
11th	London	1930
12th	New York	1934
13th	Zurich	1938

[1]The sixteen-year interval between the Third and Fourth Congresses was caused by the Franco-Prussian War and unsettled conditions in Europe following it.
[2]The Tenth Congress had to adjourn after the first day because of outbreak of World War I.

At the request of the Permanent Commission, the AVMA has joined with the veterinary associations of Sweden and Switzerland in underwriting funds needed to carry on organization work for the Fourteenth International Veterinary Congress in London. There was no surplus from the Zurich meeting and the few funds available for the Permanent Commission's work since then have been exhausted. Accordingly, the AVMA Executive Board, at its last meeting, approved an advance of $400 as the Association's share. It is understood that the three associations will be repaid from any surplus resulting from the London congress.

Colonel McCallam Promoted to Brigadier General

Colonel James A. McCallam of the Army Veterinary Corps became the first peacetime general officer of that corps on Jan. 24, 1948, when President Truman, following Senate confirmation the day before, appointed him to the permanent rank of brigadier general. Recommendation for the promotion was made by the Army selection board, under a provision of the Officer Personnel Act of 1947. Under further Army provisions, Brig. Gen. McCallam may retain his post in the Veterinary Division, Office of the Surgeon General, for a period of five years from date of rank—or until Jan. 24, 1953.



Brig. Gen. James A. McCallam

News of the promotion was received enthusiastically by all branches of the veterinary pro-

fession, not only because the new general is held in high regard, but also because the appointment practically insures better representation for the Veterinary Corps in military affairs.

Brig. Gen. McCallam succeeded Brig. Gen. R. A. Kelser as head of the Veterinary Division, Office of the Surgeon General, on Jan. 10, 1946, following a long and distinguished military career begun as a second lieutenant in July, 1917. During the years of peace, he served at various posts in the United States and Hawaii, and during World War II he served in Australia, New Guinea, Leyte and Luzon in the Philippines, and finally with the occupation forces in Japan. For over a year prior to relief from overseas duty, he served as executive officer of the medical section of Sixth Army headquarters.

General McCallam is 53 years old, a native of Philadelphia, and a graduate of the University of Pennsylvania (V.M.D., 1917).

Centennial Celebration

The American Association for the Advancement of Science has announced its centennial celebration to be held in Washington, D. C., Sept. 13-17, 1948. In order to emphasize the importance of the theme, "One World of Science," a number of symposiums on scientific subjects of interest to the general public, as well as to scientists, is being organized. The subjects and speakers will represent all fields of science. Some of the subjects will be: World Health Problems; Problems of the Ocean, Fuel, and Power; Genetics and the Future; Synthetic Elements; Nucleonics; New Foods; and many others.

More than 40 educational and cultural institutions in the Washington area are assisting in local preparations, including registration, information, publicity, and housing.

Since many of the affiliated and associated societies had their origin in the sections of the Association, the centennial celebration properly heralds the birthdate of the greatest federation of scientific societies in the world. It is estimated that more than 10,000 persons will attend this celebration.

Veterinarians Featured on "Adventures in Science" Broadcast

How veterinarians have helped to make America the best fed country in the world was told on the Columbia network program, "Adventures in Science" Jan. 31, 1948. Speakers were Dr. A. H. Quin, chairman of the AVMA Committee on Public Relations, and Dr. R. C. Klussendorf, associate editor of the JOURNAL.

The "Adventures in Science" series is a regular CBS Saturday afternoon feature (3:15 p.m. EST) and is produced by Science Service under the direction of Mr. Watson Davis, editor of *Science News Letter*. The script for the January 31 broadcast was prepared by the AVMA office, in coöperation with the Committee on Public Relations.

Courses in Laboratory Diagnosis of Parasitic Diseases

Three refresher courses in laboratory diagnosis of parasitic diseases will be offered during 1948 by the Laboratory Division of the Communicable Disease Center, U. S. Public Health Service. The inclusive dates for these classes are as follows:

January 12—February 20 (class filled)
July 12—August 20
October 11—November 19

These courses are open to all grades of employed laboratory personnel and although at the present time priority is given to the laboratories of state and local public health departments, applicants from hospitals and private laboratories will be considered when vacancies occur.

There is no tuition or laboratory fee but travel and living expenses must be paid for by the individual or his employer. Such expenses can be paid from Title VI funds.

Applications should be made as far in advance as possible. Notification of acceptance from this office will be made approximately two months before the course begins so that the states may have time to arrange budgetary allotments.

It is suggested that trainees obtain reservations for living accommodations at the earliest possible date. A list of hotels and rooming houses will be sent to applicants at the time of acceptance.

Laboratory directors and senior staff members wishing to attend any of the six-week courses may do so. However, it is proposed to schedule a short course in the laboratory diagnosis of parasitic diseases for individuals in the above mentioned category on March 8-19, 1948.

For further information regarding content of courses, write to: Communicable Disease Center, Laboratory Division, 291 Peachtree Street, Atlanta, Ga.

National Dog Week Report

National Dog Week's report for 1947 is just off the press, according to Mr. Raymond J. Hanfield, executive secretary. Copies may be had, without charge, by writing to National Dog Week headquarters, 424 Madison Avenue, New York 17, N. Y.

Dr. A. R. Theobald, of Cincinnati, president of the American Animal Hospital Association and Miss Louise Branch, vice president of the American Humane Association, have been added to the advisory committee of National Dog Week.

Convention Insert in This Issue

The convention story this month is contained in the rotogravure insert which will be found in this issue. Hotel information and the reservation blank are on ad pages 42 and 43. *Three choices of hotels must be indicated.*

More information about the special AVMA convention tour to San Francisco in August will be published in the April issue.

STUDENT CHAPTER ACTIVITIES

Student Chapter Meeting.—The Ohio State Student Chapter met on Jan. 21, 1948. Dr. C. L. Lindborg, who was formerly associated with Dr. Otto Stader at Ardmore, Pa., discussed the uses and limitations of the Stader splint in the repair of fractures. The film, "Valiant Years" will be shown at the next meeting.

s/C. TITKEMEYER, *Secretary.*

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Change in Entrance Requirements at Cornell.—Beginning in 1949-1950, two years of college preparation will be required for entrance to the New York State Veterinary College at Cornell University, Ithaca, Dean W. A. Hagan has announced. The current requirement is one year of college preparation. The two years' work will permit the student to obtain a more complete basic education before beginning his professional veterinary training.

In his preparatory work in an approved college or university, the student will be required to complete six semester hours each in English, physics, and biology or zoölogy, and 12 semester hours of chemistry.

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Chapter Meeting.—The student chapter of the Ohio State Veterinary Medical Association met on February 4 to elect officers. The election results were: Joseph Salisbury, *president*; Rameau Johnson, *vice-president*; Robert Houser, *treasurer;* and Dale Keyser, *secretary.*

Dr. J. T. Burris discussed the history behind the picture "Valiant Years," explaining the organization of the serum industry and the part played by the American Foundation for Animal Health in disseminating information concerning advantages of modern veterinary science. After his introduction, the picture was shown.

s/C. TITKEMEYER, *Secretary.*

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X, Section 2.

First Listing

CALDWELL, JOHN W.
4579 8th St., Riverside, Calif.
D.V.M., San Francisco Veterinary College, 1915.
Vouchers: J. L. Tyler and L. M. Hurt.

DIAZ G., ANTONIO
Cerrada de Mazatlan, No. 7, Colonia Condesa, Mexico, D. F.
D.V.M., Universidad Nacional de Mexico, 1925.
Vouchers: A. Alexander and F. Camargo.

FRITCHEN, F. J.
P. O. Box 91, Franksville, Wis.
D.V.M., Chicago Veterinary College, 1915.
Vouchers: R. C. Klussendorf and V. S. Larson.

FRY, EVERT W.
Hope, Indiana.
D.V.M., Indiana Veterinary College, 1921.
Vouchers: J. G. Hardenbergh and H. W. Demsey.

GARCIA R., LUIS
Linea No. 809, Apto. 27, Vedado, Havana, Cuba.
D.V.M., University of Havana, 1934.
Vouchers: M. Stincer and A. M. Morales.

HERZER, PHILIP C.
7108 Woodward Ave., Bell, Calif.
D.V.M., New York State Veterinary College, 1917.
Vouchers: L. M. Hurt and C. E. Wicktor.

JOHNSON, PERCY C.
D.V.M., Iowa State College, 1929.
Vouchers: J. M. Alexander and W. L. Boyd.

LEENERTS, THEODORE H.
Route 2, Boise, Idaho.
D.V.M., Colorado Agri. College, 1931.
Vouchers: T. R. Myers and A. P. Schneider.

MEYER, JOSHUA F.
145 N. Highway St., St. Helens, Ore.
D.V.M., Colorado A. & M. College, 1935.
Vouchers: L. G. Soderholm and C. R. Howarth.

NAGGE, WILLIAM T.
1016 9th Ave. W., Calgary, Alberta.
D.V.M., Ontario Veterinary College, 1943.
Vouchers: G. G. Pook and J. G. Anderson.

NICHOLS, WILLIAM J.
4162 Monroe Ave., Wayne, Mich.
D.V.M., Michigan State College, 1943.
Vouchers: F. Thorp Jr. and B. J. Kilham.

PHELPS, GENE C.
Wells, Minnesota.
D.V.M., Iowa State College, 1946.
Vouchers: E. A. Benbrook and I. A. Merchant.

ROBERTS, HARRY B.
1300 W. 117th St., Cleveland 7, Ohio.
D.V.M., Ohio State University, 1933.
Vouchers: C. C. Wagner and A. G. Madden, Jr.

ROOT, GEORGE F.
1630 Eastlake Ave., Seattle 2, Wash.
D.V.M., Washington State College, 1918.
Vouchers: O. A. Anderson and F. C. Cummings.

SHOEMAN, JOHN D.
110 E. 46th St., Atlantic, Iowa.
D.V.M., Kansas State College, 1928.
Vouchers: A. H. Quin and J. H. Krichel.

SNELBAKER, HARRY A.
Box 1252, Oroville, Calif.
D.V.M., Iowa State College, 1938.
Vouchers: R. N. Erickson and R. N. Donnelly.

SOLTOWSKI, KAZIMIERZ A.
1907 N. Hoyne Ave., Chicago 47, Ill.
V.S., Academy of Veterinary Medicine, Lwow, Poland.
Vouchers: P. J. Meginnis and A. M. Collins.

STEELE, WALTER H.
2115 N. E. 38th Ave., Portland 13, Ore.
D.V.M., Colorado State College, 1932.
Vouchers: B. E. Stickrod and C. A. Bjork.

WHITE, KENNETH A.
1120 Main, Lewiston, Idaho.
D.V.M., State College of Washington, 1930.
Vouchers: G. C. Holm and R. C. Klussendorf.

WOLF, MORTON
76 Goodale Rd., Mattapan 26, Mass.
D.V.M., Michigan State College, 1946.
Vouchers: G. B. Schnelle and T. O. Munson.

Second Listing

Becker, Louis R., 410 N. 7th Ave., Phoenix, Ariz.
de Holl, John C., 217 N. 6th St., Birmingham, Ala.
Evans, John W., Box 74, Carthage, Tenn.
Gingras, George E., Fort Covington St., Malone, N. Y.
Haggerty, Laurence V., 229 Atlantic Ave., Apt. 206, Long Beach, Calif.
Herrada L., Manuel, Calle 19 No. 601, esq. a C, Vedado, Havana, Cuba.
O'Harra, Guy L., Box 826, Merced, Calif.
Turkheimer, Bruno, 1730 18th Ave., San Francisco 22, Calif.
Ward, Norman R., 597 Park Ave., Worcester, Mass.

1948 Graduate Applicants

First Listing

The following are graduates who have recently received veterinary degrees and who have applied for AVMA membership under the provision granted in the administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

Michigan State College

FELL, JOSEPH M., D.V.M.
Gaines Research Kennels, Ridgefield, Conn.
Vouchers: F. Thorp, Jr. and B. J. Killham

New York State College

BENSON, KENNETH W., D.V.M.
Dover Plains, New York.
Vouchers: H. C. Stephenson and J. D. Wheat.

Second Listing

Alabama Polytechnic Institute

Baetz, N. Annelda, D.V.M., 1121 Mason St., San Antonio 8, Texas.
*Brow, Byron H., Box 484, Green Cove Springs, Fla.
Callis, Jerry J., D.V.M., Sasser, Georgia.
Dixon, Charles R., D.V.M., Thomasville, Georgia.
Gittings, Ben L., D.V.M., N. Howell Ave., Brooksville, Fla.
Gurley, Claybron H., D.V.M., 304 Peachtree St., Johnson City, Tenn.
Hamlin, Homer H., D.V.M., Aliceville, Alabama.
Kittrell, Belmont K., D.V.M., Robersonville, N. Carolina.
Lasday, Richard M., D.V.M., 829 San Marco Blvd., Birmingham, Ala.
Lewis, Robert Y., D.V.M., 2104 31st St. W., Birmingham, Ala.
McAfee, O. Luttrelle, D.V.M., Wrightsville, Georgia.
Meredith, John S., D.V.M., Statesville, N. Carolina.
O'Connor, Thomas J., D.V.M., Chauncey, Georgia.
Thomas, William L., D.V.M., 906 Broadway Ave., Little Rock, Ark.
Thompson, Bob C., D.V.M., 709 S. Main St., Columbia, Tenn.

Michigan State College

Brunn, William H., D.V.M., 2820 Telegraph Rd., Dearborn, Mich.

University of the Philippines

Sher, Herman, D.V.M., 711 James St. N.S., Pittsburgh 12, Pa.

*Incorrectly listed as Henry B. Byron, February, 1948 issue, Student First Listing.

COMMENCEMENT

A. & M. College of Texas

At the commencement exercises for the A. & M. College of Texas on Jan. 29, 1948, the following candidates were presented for the D.V.M. degree.

William E. Davenport
Mainard E. Genrich
Harold L. Hurst
Robert V. Johnston
W. L. Jones, Jr.
Robert S. Knight
Mason L. Matthews
Kenneth M. McEnroe
Thomas B. Snodgrass
Walter W. Toxey
Floyd Murrell Ward

AMONG THE STATES AND PROVINCES

Arkansas

Association Meeting.—The Arkansas Veterinary Medical Association met at the Hotel Marion in Little Rock on Jan. 15-16, 1948, for their thirty-second annual meeting. The following officers were elected: Dr. C. T. Mason, Little Rock, *president;* Dr. H. B. Elliott, Newport, *vice-president;* Dr. T. D. Hendrickson, Little Rock, *secretary-treasurer.*

The *Arkansas Veterinary Bulletin* was established as the official publication of the association with Dr. T. D. Henrickson as editor. The program included the following discussions:

Dr. R. D. Turk, head, Department of Veterinary Parasitology, Texas A. & M. College, College Station: "Internal Parasites."

Dr. W. W. Armistead, professor, Department of Veterinary Surgery and Medicine, Texas A. & M. College, College Station: "Methods of Fracture Reduction and Fixation."

Dr. G. R. Moore, professor, Department of Surgery and Medicine, Kansas State College of Agriculture and Applied Science, Manhattan: "Acetonemia, Milk Fever, and Grass Tetany."

Dr. Allen W. Rice, inspector in charge, Arkansas division, BAI, Little Rock: "Foot-and-Mouth Disease."

Nine new members were accepted and three clinic meetings were planned for 1948. The meeting was concluded with a banquet.

S/T. D. HENDRICKSON, *Secretary.*

California

Veterinarians Seek Cause of Q Fever.—All veterinarians who attended the annual midwinter meeting of the California State Veterinary Medical Association on the California State Polytechnic College campus, Jan. 5-7,

1948, had blood samples taken to determine if the organism causing Q fever may be present over the entire state. The disease, similar to influenza, is trasmissible from animals to human beings, and all livestock workers are susceptible. It was hoped that a survey of the veterinarians, who represented almost every community in the state, would give some indication of the spread of the disease.

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Rabies in San Mateo County.—The state department of health has threatened to assume control of the lingering rabies outbreak at Brisbane, unless San Mateo County authorities act immediately to control dogs. Stockmen suggested a dog ordinance for San Mateo County a few years ago, but postponed action due to lack of interest on the part of metropolitan areas.—*Calif. Wool Grower, Dec. 30, 1947.*

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Backs the Cavalry Arm.—The *Los Angeles Times*, Dec. 29, 1947, quoting Lt. Gen. Truscott, U. S. Army, comes to the defense of the cavalry in modern warfare regardless of the secondary rôle in which mounted troops have been placed by tanks and airplanes. Occasions sprang up in the Italian campaign where a cavalry division would have made short work of an operation.

S/RICHARD A. SHEA.

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Swamp Fever.—Race-horse interests are concerned about the New England outbreak of equine infectious anemia since several horses from the site of the outbreak were shipped to the track at Albany (Calif.) before the date of the New England quarantine. Sponsored by Dr. A. K. Carr, chief of the Division of Animal Husbandry, State Department of Agriculture, a conference was held at Albany in December to launch plans for preventing the introduction of the infection among the race horses of the state, with the U. S. BAI, the horse-racing board, owners, and veterinarians participating.

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The 28-Hour Law.—On the ground that violations are rare, California cattlemen are vigorously opposing the proposed changes in the federal 28-36 Hour Law, which would shorten the time cattle are permitted to remain loaded and unfed while in transit.

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Plague Infected Rodents.—Four wood rats taken in Modoc County were proved positive for bubonic plague and 1 human case occurred in the locality early last summer. The diagnosis in the rats was made through the constant vigilance of the Hooper Foundation, University of California.

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Avian Tuberculosis.—Although tuberculosis does not figure among the state's major poultry plagues, it was not always thus. In 1903, A. R. Ward of Berkeley wrote: "An investigation during the past summer showed that the disease almost depopulated the poultry pens along the Pacific Coast."

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Personal.—Dr. C. U. Duckworth, assistant director of the State Department of Agriculture, was one of the three California representatives at the Border States Foot-and-Mouth Disease Control Board conference held at El Paso, Texas, in December, 1947.

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Personal.—Dr. Bert Reinow of Pinedale, Wyoming, has put on again the Army's "olive drab" while attending the Reserve and National Guard Officer Indoctrination Course No. 4 being conducted at Fort Winfield Scott, San Francisco, Calif. He holds the rank of Major.

During World War II, Major Reinow was an instructor to the Chinese army and special sanitary inspector to the China air service command.

District of Columbia

Monthly Meeting.—The District of Columbia Veterinary Practitioners Association held its monthly meeting at the Hamilton Hotel on Jan. 20, 1948. The guest speaker was Dr. A. H. Craige of the University of Maryland, whose subject was: "Recent Developments in Veterinary Research." An open discussion on current problems of the small animal practitioner followed.

S/M. PARSONS, *Secretary.*

Georgia

Personal.—Dr. Clifford H. Milks, Newark Valley, N. Y., has been appointed head of the Clinics and Medicine Department at the School of Veterinary Medicine, University of Georgia, Athens.

Illinois

State Association.—The Illinois State Veterinary Medical Association held its annual meeting at the Pere Marquette Hotel in Peoria on Jan. 28-30, 1948. Following President C. E. Fidler's address, the program was presented.

Dr. W. J. Gibbons, Department of Veterinary Medicine, Alabama Polytechnic Institute, Auburn: "Nervous Diseases of Animals" (with motion picture).

Dr. Roland R. Cross, director, Illinois department of Public Health, Springfield: "Veterinary Opportunities in Public Health."

Mr. Banner Bill Morgan, Department of Veterinary Science, University of Wisconsin, Madison: "Trichomoniasis."

Dr. C. A. Brandly, Department of Veterinary Science, University of Wisconsin, Madison: "Newcastle Disease."

"Swine Surgery" (film from the AVMA library).

A panel discussion on "Regulatory Activities" was presented by Dr. W. A. Walker, Golconda, the moderator; Mrs. Evelyn Mockbee, Springfield; Drs. W. B. VanCleave, Peoria; N. H. Howlett, veterinary inspector in charge, BAI, Springfield; and L. R. Davenport, assistant superintendent, Division of Livestock Industry, Springfield.

Dr. J. G. Mackay, Eglinton Animal Hospital, Toronto, Canada: "Intra-Medullary Pinning of Long Bone Fractures" (with illustrations).

Dr. F. X. Gassner, Colorado A. & M. College, Fort Collins: "Applied Endocrinology in Small Animal Medicine."

The films, "Edema, Cardiac and Renal," and

"Diagnosis of Urologic Conditions," were presented by Winthrop-Stearns, Inc.

Dr. Anton J. Carlson, University of Chicago: "Can We Apply the Known and Probe the Unknown in the Biologic and the Medical Sciences Without Recourse to Experiments on Animals?"

The film, "Valiant Years," was presented by Associated Serum Producers.

Dr. T. T. Chaddock, Grafton, Wis.: "Diseases of Fur Bearing Animals."

Dr. W. A. Venzke, Department of Veterinary Preventive Medicine, University of Ohio, Athens: "Titer Differentiation in Brucellosis."

A panel discussion on "Baby Pig Diseases," was presented by Dr. C. C. Hastings, Williamsville, the moderator; Drs. H. E. Pinkerton, special representative, Fort Dodge Laboratories; C. C. Morrill, Department Veterinary Medicine, University of Illinois; J. H. Murphy, BAI, Paris; and C. A. Lemen, Warrensburg.

Dr. C. K. Mingle, assistant in charge, Tuberculosis Eradication Division, BAI, Washington, D. C.: "Bureau Research in the Use of Strain 19."

The films, "Swine Brucellosis," "Bovine Surgery," and "Newcastle Disease," from the AVMA film library, were shown.

Dr. M. W. Allam, School of Veterinary Medicine, University of Pennsylvania, Philadelphia: "Surgical Anomalies of the Vagina in the Canine," and the film, "Perineal Herniorrhaphy."

Mr. E. W. Doede, Analab Corp., Chicago: "Essential Fatty Acids in Canine Skin Disorders."

"Small Animal Practice," a panel discussion with Dr. C. L. Miller of Oak Park as moderator. Participating in the discussion were Drs. C. L. Bramer, Evanston; J. P. Coble, Springfield; L. J. Lacroix, Evanston; C. A. Henley, Jacksonville; W. A. Young, Chicago; and F. X. Gassner, Fort Collins, Colo.

Dr. L. R. Davenport, assistant superintendent, Division of Livestock Industry, Springfield: "Veterinary Relationship to Livestock Interests in Disease Control."

Dr. Robert Graham, dean, College of Veterinary Medicine, University of Illinois, Urbana, spoke on related topics.

Dr. W. D. Daugherty, Veterinary Medical Department, Pitman-Moore Co., Indianapolis, Ind.: "Veterinary Ethics."

A panel discussion, "Professional and Business Methods," with Dr. R. C. Klussendorf, assistant executive secretary, AVMA, Chicago, as moderator, consisted of Drs. C. C. Hastings, Williamsville; A. E. Dickerson, Springfield; A. M. Orum, Carthage; and R. E. Ruggles, Moline.

The ladies were entertained at a luncheon and tea and enjoyed with their husbands the banquet and dance in the grand ballroom of the Pere Marquette Hotel.

s/A. G. MISENER, *Secretary.*

The centenary of Sir James Young Simpson's discovery of chloroform anesthesia was celebrated at Edinburgh, Scotland, on Nov. 4, 1947.

Affiliation with ISVMA Proposed.—There have been for some time five district organizations of veterinarians in Illinois, and recently the southern area has been organized so that there are now six veterinary medical organizations meeting regularly in the following cities: Northern Illinois, Rockford; Mississippi Valley, Peoria; Eastern Illinois, Champaign; Central Illinois, Springfield; Southern Illinois, Mt. Vernon; and the Chicago Association in Chicago.

A proposal to establish the district associations as part of the ISVMA was submitted to the Executive Board of that Association. The Board suggested that the plan be presented to the various district organizations for consideration. The integration of these districts with the state association would bring about closer coöperation and would facilitate the administration and promotion of programs sponsored by the ISVMA, the Division of Livestock Industry, the Bureau of Animal Industry, and the College of Veterinary Medicine. Several states have already organized their veterinary medical associations in a similar manner and it has proved successful.

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Bovine Leptospirosis.—Bovine leptospirosis, previously unrecognized in Illinois, has made its appearance. The state university recently reported 4 cases in a herd of 20 breeding cattle under the care of Dr. H. R. Hester, of Farmer City. One of the animals, treated early with penicillin, survived, but the other 3 died. Although 15 calves were kept with the breeding herd, none became infected.

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The Price of Beef.—The prize carload of Hereford steers brought $60.00 per cwt.; a grand champion carload sold for $56.75 per cwt.; 10 carloads cost the buyer, $44.60 per cwt.; 37 carloads of calves averaged $33.45; and 77 carloads of mixed yearlings and calves were sold at $27.90 per cwt. It happened at the Chicago Feeder Cattle Show Oct. 30-31, 1947. To judge the future price of beef, remember that these cattle will be returned to the market at a profit to the feeder; that less than half of their weight is edible flesh; and that only a fraction is choice cuts. Adds the *Kansas Stockman:* "The year 1948 promises to be another good one for most livestock producers."

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Personal.—Dr. W. C. Glenney has sold his Tri-City Hospital and small animal practice in Elgin to Drs. E. C. Saunders (OSU '43) and Ralph T. Fireoved (OSU '43). Dr. Glenney left February 15 for Ardmore, Pa., where he will be associated with Dr. Otto Stader.

Dr. Glenney joined the ISVMA in 1937 and served as chairman of the executive board and vice-president (1942). In 1943, he was elected president, the youngest state president in Illinois up to that time. He served as secretary-treasurer of the Northern Illinois Veterinary Medical Association in 1944, and in 1947 was elected president of the Midwest Small Animal Association.

Indiana

State Association.—New officers elected at the sixty-fourth annual convention of the Indiana Veterinary Medical Association in Indianapolis, Jan. 15-17, 1948, were: Dr. C. C. Dobson, New Augusta, *president;* Dr. Henry A. Lidikay, Darlington, *vice-president;* Dr. W. W. Garverick, Zionsville, *secretary-treasurer.* Members of the board of directors are Drs. Frank H. Brown, Indianapolis; E. W. Spieth, Jeffersonville; C. R. Baumgartner, Spencerville; C. Harvey Smith, Crown Point; M. M. Coble, Columbia City; and G. R. Oldham, Kokomo.

After the business meeting, members and their wives were entertained at a banquet and dance.

s/W. W. GARVERICK, *Secretary.*

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Dr. L. M. Hutchings Honored.—Dr. Leslie M. Hutchings (MSC'40), associate pathologist on the veterinary research staff of Purdue University, was recognized as Indiana's outstanding young man of 1947 at the annual mid-year conference of the Indiana Junior Chamber of Commerce in Richmond on Jan. 24, 1948. Dr. Hutchings is recognized as a leader in the field of swine brucellosis, the principal source of undulant fever in human beings.

President, O. H. Roberts of the Hoosier young men's organization of Evansville said, "The Indiana Junior Chamber of Commerce makes this award to the young man, selected by a distinguished panel of leaders in government, medicine, business, agriculture, and education, who, in their opinion, made the outstanding contribution in his field of endeavor and who by his work and other activities has contributed most to the general welfare of Indiana and its people during 1947."

Lieut. Gov. Richard T. James, chairman of the judging committee, in making the presentation to Dr. Hutchings, stated, "Here is a young man, just 32 years old, who has this year successfully conducted research making possible, for the first time, a practical answer for the control of a disease that a state commissioner of health estimated affects 350,000 [people] or 10 per cent of our state population. In conducting this research, Dr. Hutchings has exposed himself and contracted undulant fever which continues to cause his confinement periodically. The successful research in brucellosis in swine is not only of vast economic importance to the swine industry but also to the health of our great Indiana and national rural population."

Dr. Hutchings was selected by a committee which included Dr. Frederick L. Hovde, president of Purdue University; David C. Wylie, president of the Bloomington Limestone Corp. and president of the Indiana State Chamber of Commerce; Hassil N. Shenck, president of the Indiana Farm Bureau; Dr. L. E. Burney, Indiana State Health Commissioner; and Lieutenant Governor James.

Iowa

Annual Meeting.—The sixtieth annual meeting of the Iowa Veterinary Medical Association was held at Hotel Fort Des Moines, Jan. 20-22, 1948. The following speakers appeared on the program:

Dr. John Patterson, Des Moines: "Fishing" and "Hunting" (motion pictures).

Dr. John M. Hurd, Schleswig: "Business Principles of Practice."

Dr. R. C. Klussendorf, assistant executive secretary, AVMA, Chicago, Ill.: "American Veterinary Medical Association Affairs," and "Mastitis in the Bovine Animal."

Dr. I. P. Irwin, Iowa City: "Laboratory Technique for the Practitioner."

Dr. G. R. Fowler, head, Veterinary Surgery, Division of Veterinary Medicine, Iowa State College, Ames: "Equine Surgery" (illustrated).

Dr. I. E. Hayes, Waterloo: "Equine Practice."

Dr. K. W. Smith, Sioux City: "Small Animal Practice."

Dr. E. C. Howe, Iowa City: "Small Animal Practice."

Dr. P. M. Haight, Cresco: "Dairy Cattle Practice."

Dr. A. H. Quin, head, Professional Service Division, Jensen-Salsbery Laboratories, Inc., Kansas City, Mo.: "New Developments in the Fields of Veterinary Therapeutics and Immunology."

Associated Serum Producers, Inc., presented the motion picture, "Valiant Years."

Dr. F. S. Sharp, Ute: "Swine Practice."

Dr. L. M. Hutchings, associate pathologist, Department of Veterinary Science, Purdue University, Lafayette, Ind.: "Baby Pig Diseases."

Dr. Louis L. Madsen, head, Department of Animal Husbandry, Utah State Agricultural College, Logan: "Swine Nutrition."

Dr. G. R. Fowler conducted a forum on "General Practice." Panel members were Drs. E. R. Frank, I. E. Hayes, E. C. Howe, L. M. Hutchings, R. C. Klussendorf, A. H. Quin, and F. S. Sharp.

The ladies were entertained at a tea, luncheon, and enjoyed the banquet and dance with their husbands.

s/C. C. FRANKS, *Secretary.*

Kansas

City Association.—The Kansas City Veterinary Medical Association held its annual meeting for installation of officers at the Advertising and Sales Executive Club, Jan. 13, 1948. The following officers were elected: Dr. Robert L. Anderes, Kansas City, Mo., *president;* Dr. John Haley, Topeka, *vice-president;* and Dr. Earl Mundell, Jen-Sal Laboratories, Kansas City, Mo., *secretary-treasurer.* The film "Valiant Years" was shown and a banquet and dancing were enjoyed by members, their wives, and guests.

s/G. B. SMITH, *Secretary.*

Louisiana

State Association.—The Louisiana State Veterinary Medical Association met on Feb. 26, 1948, at the state university. Officers elected at this meeting were: Drs. K. W. Franks, Minden, *president;* C. McHenry Greer, Winnsboro, *vice-president;* and C. H. Heflin, Baton Rouge, *secretary-treasurer.* Dr. W. T. Oglesby was selected as delegate to the House of Representatives. The program follows:

Dr. W. A. Hagan, dean, New York State Veterinary College, and president, AVMA, Ithaca, N. Y.: "Rabies."

Dr. E. J. Meixel, president, Louisiana State Veterinary Medical Association, New Orleans: "Specific Activities for the Louisiana Veterinary Medical State Association."

Dr. E. A. Davis, Columbus, Georgia: "Cattle Practice."

Dr. C. H. Covault, Ames, Iowa: "Small Animal Practice."

Dr. W. L. Treuting, president, Louisiana State Board of Health: "Epidemiology of the Encephalitides of Human Beings."

After Dr. Treuting's speech, Dr. Covault served as moderator of a discussion on this subject. Members participating included Drs. W. L. Treuting, E. A. Davis, Sam Liggen, W. S. Hornsby, Gifford Hargis, and P. L. Piercy.

In the evening, the members were entertained at a banquet.

s/W. T. OGLESBY.

Maine

New Officers.—The Maine State Veterinary Medical Association met on Jan. 14, to elect officers for 1948. They are Dr. S. D. Merrill, Augusta, *president;* Dr. L. B. Denton, Dover Foxcroft, *vice-president;* and Dr. S. W. Stiles, Portland, *secretary-treasurer.*

Massachusetts

State Association.—The annual meeting of the Massachussetts Veterinary Association was held on Jan. 22, 1948, in the Hotel Statler in Boston. Dr. J. N. Frost, Department of Surgery, New York State Veterinary College, Cornell University, spoke on "Surgery in Large Animal Practice." After the business meeting the men were entertained at a social hour and dinner.

Michigan

Postgraduate Conference.—The twenty-fifth annual postgraduate conference for veterinarians was held at Michigan State College, East Lansing, on Jan. 21-22, 1948.

The opening session of the conference was devoted to a clinic which presented demonstrations of the use of anesthetics, dehorning, and sheep parasite control. Participating in the clinic were Drs. J. F. Smithcors, Frank Thorp, Jr., G. W. Reed, John Quinn, and H. O. Elliott. Other speakers on the program were:

Mr. Elwood A. Garner, Strasenburgh Co. of Rochester, N. Y.: "The Manufacture and Use of Medicinal Tablets."

Dr. T. L. Steenerson of Wilkinson, Ind.: "Sow Trouble Incidental to Farrowing," and "Miscellaneous Swine Diseases."

Dr. F. R. Booth, Elkhart, Ind.: "Problems Confronting the Small Animal Practitioner."

Dr. B. J. Killham, East Lansing, was moderator of a panel discussion, "Business Methods and Ethics." Participants were Drs. H. Dykema, Muskegon; L. H. LaFond, Detroit; G. W. Reed, Lansing; E. C. W. Schubel, Blissfield; J. M. Timms, Hudson; and Ivan Wood, Mt. Clemens.

A symposium, "Michigan Brucellosis Control Situation," was presented by Drs. C. F. Clark, state veterinarian, Lansing; C. H. Hays, federal inspector in charge, Lansing; and I. F. Huddleson, Michigan State College, East Lansing.

Dr. Gerry B. Schnelle, Needham, Mass.: "Contagious Canine Hepatitis," and "Discussion of X-ray Diagnosis in Small Animal Practice" (Illustrated).

Drs. P. A. Hawkins and F. E. Eads both of East Lansing: "The Use of Benzine Hexachloride and Sodium Fluoride for the Control of External Parasites of the Hog."

Drs. Arthur Wolff, East Lansing, and Wm. Stroup, Elkhart, Ind.: "The Veterinarian in Public Health Work."

Drs. H. J. Stafseth, East Lansing; H. P. Eames, Manchester; and Harry Munro, Zeeland: "Problems in Poultry Practice."

Dr. H. O. Von Rosenberg, Parke-Davis Co., Detroit: "Endocrine Glands and Their Hormones in Reproduction."

The Junior AVMA furnished entertainment and four moving pictures were presented.

s/B. J. KILLHAM, *Secretary.*

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Southeastern Association.—The Southeastern Michigan Veterinary Medical Association met at the Herman Kiefer Hospital, Jan. 14, 1948. Dr. Wayne H. Riser, associate editor of the *North American Veterinarian,* and pathologist at the North Shore Animal Hospital, Evanston, Ill., spoke on surgical diseases of the ear in small animals and upon other pertinent topics in small animal work.

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District Association.—The Michiana Veterinary Medical Association met, Jan. 8, 1948, at the Four Flags Hotel, Niles. Mr. Ray Karras led a discussion on income tax.

Minnesota

Annual Convention.—The Minnesota State Veterinary Medical Society held its fifty-first annual convention in St. Paul on Jan. 5-7, 1948. The following officers were installed at this meeting: Dr. R. Fenstermacher of University Farm, St. Paul, *president;* Dr. C. H. Haggard, Luverne, *president-elect;* Dr. J. J. Kelly, Marshall, *first vice-president;* Dr. W. F. Flanary, St. Charles, *second vice-president;* Dr. H. E. Schwermann, New Ulm, *trustee;* Dr. H. C. H. Kernkamp, University Farm, St. Paul, *secretary-treasurer.*

Guest speakers included Dr. W. F. Guard, professor of veterinary surgery, Ohio State University, Columbus; Dr. W. D. Pounden, research veterinarian with the Ohio Agricultural Experiment Station, Columbus; Dr. F. C. Tucker, Claypool, Ind.; Dr. C. F. Schlotthauer, Mayo Foundation, Rochester, Minn.; Dr. J. N. Hurd, Schleswig, Iowa; Dr. S. H. McNutt, University of Wisconsin, Madison; and Dr. I. A. Merchant, Iowa State College, Ames.

Dr. J. L. Morrill, president, University of Minnesota, and Mr. Paul E. Miller, director of agricultural extension, addressed the assembly at the annual dinner. Following the dinner, a dancing party in the Casino Room of the Hotel St. Paul provided entertainment for members and their wives.

s/H. C. H. KERNKAMP, *Secretary.*

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New Veterinary School is Progressing.—The new School of Veterinary Medicine at the Uni-

versity of Minnesota which was authorized in the spring of 1947, and for which the state legislature last year appropriated $1,000,000 for the biennium, is making substantial progress. A freshman class of 24 students was admitted at the beginning of the 1947 fall term.

Gross and microscopic anatomy are being taught in two new laboratories constructed in the old veterinary science building which was damaged by fire in 1943. A library and reading room for students has been provided in the same building. A new temporary building of the army barracks type, three stories in height, is nearing completion. The ground floor will be used for a diagnostic laboratory and the other two floors for offices and laboratories for teaching bacteriology, parasitology, pathology, physiology, and pharmacology. The temporary building will be large and will furnish the space needed until a new basic science unit is built. Plans are now under way for a new clinic building which will be constructed ahead of the basic science unit in order to meet the early needs for clinic instruction of the class already admitted.

Dr. W. L. Boyd, chief of the Division of Veterinary Medicine at the University and Director of the School of Veterinary Medicine, states that, because of the large number of qualified applicants now enrolled at the institution and because teaching facilities at the new school must be developed with care and rather slowly, it does not appear likely that any nonresident applicants will be accepted in the near future.

First-year subjects are being taught by the following faculty members:

Animal Anatomy.—Three quarter course covering anatomy of domestic animals. Professor H. C. H. Kernkamp. Instructors Ralph L. Kitchell, Gabel H. Conner, and Francis R. Spurrell.

Animal Histology and Embryology.—Three quarter course covering Histology and Embryology of domestic animals. Professor H. C. H. Kernkamp. Instructors Ralph L. Kitchell and Jay H. Sautter.

Principles of Genetics.—One quarter course offered by the Division of Agronomy and Plant Genetics. Assistant Professor Jean W. Lambert.

Animal Breeding.—One quarter course offered by the Division of Animal and Poultry Husbandry. Professor Laurence W. Winters, research fellow John N. Cummings.

Physiological Chemistry.—Two quarter course offered by School of Medicine. Associate Professor David Glick.

General Bacteriology.—One quarter course offered by School of Medicine. Assistant Professor William F. McLimans.

Missouri

Fact-Finding (Poultry) Conference.—Bubbling over with enthusiasm and confidence in the future, the whole poultry industry marched on Kansas City February 1, for a three-day convention bent on putting its major problems on the road toward ultimate solution. Judging from the program, the newspaper reports, and loitering around the meetings and exhibits, no part of the industry appeared to have been slighted and says a reporter "I never attended a big convention run with such precision." For details, many of which closely concern the veterinary profession, read *U. S. Egg and Poultry Magazine*, official organ of the Institute of American Poultry Industries, Cliff D. Carpenter, president.

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Greater St. Louis Association.—The Greater St. Louis Veterinary Medical Association met on Feb. 6, 1948, at the Ralston Purina Research Laboratory. The speaker of the evening was Dr. F. D. Gentry, Springfield, Mo., who talked on "The Value to the Veterinarian of Proper Accounting Records."

At the January meeting of the Association, a dinner and dance session featured the film "Valiant Years" which had just been released by the Associated Serum Producers. Dr. J. L. Jones of Blackburn officiated as master of ceremonies. The session was held at the "Advertisers and Sales Executive Club."

s/GAIL B. SMITH, *Secretary.*

Montana

Butterfat Production.—The Yellowstone County Dairy Herd Improvement Association, with an average of 26.4 lb. of butterfat per cow, topped all associations in the state for production during December, according to J. O. Tretsven, extension dairy specialist at Montana State college.

New Jersey

Annual Meeting.—The sixty-fourth annual meeting of the Veterinary Medical Association of New Jersey was held in the Hotel Hildebrecht in Trenton, on Feb. 5-6, 1948. Following President Huff's address, the program was presented.

Dr. Ralph B. Little, The Rockefeller Institute for Medical Research, Princeton: "A Spirochetal Infection in Cattle."

Associated Serum Producers, Inc., Des Moines, Iowa, presented the film, "Valiant Years," and the USDA film, "Vesicular Diseases," was shown.

Mr. Edmund P. Coffey, vice-president, Thoroughbred Racing Protective Bureau, Inc., New York: "Precautions Taken to Prevent the Illegal Use of Stimulants in Horse Racing."

Dr. James Farquharson, head, Veterinary Surgery and Clinics, Colorado A. & M. College, Fort Collins: "Selected Surgical Procedures."

Dr. C. D. Stein, Pathologic Division, U. S. BAI, Agricultural Research Administration, Washington, D. C.: "Equine Infectious Anemia" (illustrated).

Dr. Bruno Furst, guest speaker: "Use Your Head."

Dr. C. P. Zepp, Sr., New York City: "Diseases of the Ear, Their Treatment Including Surgery."

Dr. Peter Olafson, Department of Pathology and Bacteriology, New York State Veterinary College, Cornell University, Ithaca: "A Discussion of X-Disease of Cattle."

Dr. Amos W. Stults, Hopewell: "Control and Elimination of Streptococcic Mastitis Through Use of Penicillin in a Retaining Vehicle." A discussion on this subject was led by Drs.

J. B. Hagenbuch, Princeton, and Carl Lohmeyer, Somerville.

Dr. J. C. Shaw, professor of Dairy Husbandry, University of Maryland, College Park: "Ketosis."

Dr. Raymond J. Garbutt, New York City: "Canine Surgery in Kodachrome."

Dr. J. S. Crawford, New Hyde Park, N. Y.: "Veterinarian-Client Relationships."

Dr. R. N. G. Darby, Somerville: "Sterility in Cattle."

Dr. R. A. Hendershott, Trenton: "Report of AVMA Delegate."

s/J. R. PORTEUS, *Secretary.*

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Veterinary Association Sponsors Radio Program.—The Veterinary Medical Association of New Jersey sponsored a part of the livestock and dairy program presented, Jan. 29, 1948, on the Farm Week Program. Mr. Wayne Plastridge discussed "Mastitis Control in Connecticut," and Dr. Howard W. Johnson of the U. S. BAI talked about "Johne's Disease and Tuberculosis."

New York

New York City Association.—The Veterinary Medical Association of New York City met on Feb. 4, 1948, at the Hotel Pennsylvania. The subject for discussion was "Toxoplasmosis in Small Animals" (with illustrations). Speakers were Dr. Peter Olafson, professor of Veterinary Pathology, New York State College of Veterinary Medicine, Cornell University, and Dr. George A. Jervis (M.D.), neuropathologist and director of laboratories, Letchworth Village State Hospital, Thiells, N. Y., who discussed two cases of encephalitic toxoplasmosis in dogs and the possible relationship of the disease in dogs to congenital and acquired toxoplasmosis in man.

s/C. R. SCHRODER, *Secretary.*

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A "First".—Argilla Bell Boy, Guernsey bull, weight 2,025 lb., recent arrival at the Hidden Valley Farms at Kingston, was the first more-than-a-ton bull to be shipped by air. He arrived at the Albany airport from Oklahoma City.—*From Guernsey Breeders' Journal.*

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Harness-Horse Racing.—Coming events at the Roosevelt Raceway, Westbury, advertises a program of more than $1 million for winnings. Among the more notable events are the National Pacing Derby, $25,000 on July 2; American Trotting Championship, $25,000, July 29; Roosevelt Two-Mile Trot, $40,000, August 20; and the Nassau Two-Mile Trot, $40,000, September 10. These races are known as the "big four" of harness-racing stakes. The season will include four weeks of grand circuit racing.

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Dog Show Televised.—The Westminster Kennel Club show at Madison Square Garden, New York, Feb. 12, 1948, was televised over station WCBS by Gaines Dog Foods. Between showings, winners were shown, and educational talks on the various breeds were presented.

"The Golden Gate in '48"

North Carolina

Tenth Annual Conference.—The tenth annual conference of the North Carolina Veterinary Medical Association was held at the North Carolina State College, Raleigh, on Jan. 27-30, 1948. The following speakers appeared on the program:

Dr. John D. Ray, director, Biological Laboratories, The Corn States Serum Co., Omaha, Neb.: "Differential Diagnosis of Swine Diseases," "Post Vaccination Problems in Swine," and "Baby Pig Problems."

Mr. R. S. Dearstyne, head, Poultry Department, N. C. State College, Raleigh: "The Poultry Industry."

Dr. O. F. Foley, Foley Small Animal and Poultry Hospital, Harrisonburg, Va.: "Poultry Diseases and the Practicing Veterinarian."

Dr. F. E. Mullen, pathologist, Regional Diagnostic Laboratory, Department of Agriculture and Immigration, Harrisonburg, Va.: "Poultry Problems."

Dr. T. C. Green, state veterinarian, Charleston, West Va.: "Poultry Disease."

Dr. J. D. Ray was in charge of the swine clinic; Drs. L. M. Greene, O. F. Foley, and F. E. Mullen supervised the clinic on poultry; and Dr. F. I. Elliott led the clinic on artificial insemination.

Dr. W. L. Boyd, chief, Veterinary Division, University of Minnesota, St. Paul: "Artificial Insemination as Related to the Practioner," "Infertility of Farm Animals," "The Retension of Fetal Membranes," "Brucellosis," and "Public Health Aspects of Brucellosis."

Dr. B. T. Simms, chief, BAI, Washington, D. C.: "Diseases of Dairy Calves," and "Controlling Gastrointestinal Parasites of Dairy Cattle."

Dr. R. E. Lubbehusen, manager, Disease Control Laboratories, Ralston-Purina Co., St. Louis, Mo.: "The Clinical Diagnosis of Nutritional Deficiencies in Cattle and Swine."

Drs. J. D. Ray; T. C. Green, state veterinarian, Charleston, West Virginia; L. J. Faulhaber, Raleigh; C. B. Randall; Kinston; and B. H. Staton, Rocky Mount, conducted a discussion of "Swine Disease Problems."

Mr. Deane C. Colvard, head, Department of Animal Industry, N. C. State College, Raleigh: "Livestock Development in the Southeast."

Dr. J. L. McAuliff, Cortland, N. Y.: "Mastitis," with Drs. W. L. Boyd and M. M. Leonard participating in a discussion on this subject.

Dr. W. A. Hagan, dean of the N. Y. State Veterinary College and president of the AVMA: "Mastitis: The New York State Control Program," and "Activities of the American Veterinary Medical Association."

A panel discussion on "Mastitis" consisted of Drs. J. L. McAuliff, W. L. Boyd, W. A. Hagan, W. A. Hornaday, Jr., M. M. Leonard, C. R. Swearinger, and George Hopson.

Dr. Gerry B. Schnelle, assistant chief of staff, The Angell Memorial Animal Hospital, Boston, Mass.: "X-ray Diagnosis in Small Ani-

mal Practice," "The Clinical Side of Contagious Canine Hepatitis," "Radiology in Canine Practice," and "Small Animal Clinic."

Members were entertained at a banquet, after which the film, "Valiant Years," was shown.

s/J. H. BROWN, *Secretary.*

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Testimonial Dinner for Dr. Moore.—Veterinarians in every state in the nation joined in paying tribute to Dr. William Moore, recently retired state veterinarian of North Carolina, at a testimonial dinner held in Raleigh on January 27 and attended by 200 of the state's leaders in agriculture and livestock development.

A highlight of the program was the presentation to Dr. Moore of a handsomely bound volume of about 150 letters of felicitation from veterinarians and animal industry officials throughout the nation. Also included were letters from high political figures and government officials. On the volume was stamped in gold the inscription: "In appreciation of Dr. William Moore, presented by agricultural leaders of North Carolina January 27, 1948." Dr. Moore also received a fine gold watch suitably inscribed for his thirty years of service with the veterinary division of the State Department of Agriculture.

The dinner was arranged by a key group of leaders in North Carolina agriculture. Many in the audience were veterinarians in Raleigh for the annual meeting of their state association. The program also honored Eugene G. Moss, who retired in December after heading the Oxford Tobacco Experiment Station for over thirty-five years.

Short speeches praising Dr. Moore as an individual and as a leader in the fight on cattle diseases were made by Dr. W. L. Boyd, chief, Division of Veterinary Medicine, University of Minnesota, and by former governor J. M. Broughton. Presentation of the volume of letters was made by Dr. A. A. Husman, federal veterinarian-in-charge in North Carolina; and of the watch by Dr. J. H. Hilton, dean of agriculture at N. C. State College.

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Personal.—Dr. A. A. Husman, Raleigh, was elected vice-president-at-large of the National Association of Federal Veterinarians, for 1948, at the annual convention in Chicago, Dec. 4, 1947. This office automatically carries with it the chairmanship of the Committee on Membership.

Dr. Husman is inspector in charge of tuberculosis and other bureau field activities in North Carolina.

Ohio

Cleveland Association Presents Rabies Exhibit at Health Museum.—The Cuyahoga County Veterinary Association highlighted its regular meeting on the evening of Feb. 4, 1948, with the opening of an exhibit on rabies at the Cleveland Health Museum. The exhibit included material originally prepared by the AVMA for the recent session of the American Medical Association in Cleveland and was augmented to stimulate local interest. The Cuyahoga association sponsored the display, to which an entire room was devoted, at the invitation of Dr. Bruno Gebhard, director of the museum.

Veterinarians from northeastern Ohio and their wives attended this meeting, which also included showing of the new sound motion picture, "Valiant Years," sponsored by the Associated Serum Producers and depicting the growth of the veterinary profession.

s/J. F. ROBERTSON, *Secretary.*

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Association Officers.—At the annual meeting of the Ohio State Veterinary Medical Association, the following officers were elected: Dr. G. W. Lies, *president;* Dr. H. K. Bailey, *vice-president;* Dr. J. H. Helwig, *treasurer;* and Dr. F. J. Kingma, *secretary.* Dr. J. W. Jackman was elected to the executive committee; Dr. C. R. Cole, resident secretary of the AVMA; and Dr. F. J. Kingma, delegate to the AVMA house of representatives, with Dr. R. L. McMahan as alternate.

s/F. S. KINGMA, *Secretary.*

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Compliment OSU Veterinarians.—The article entitled "A Method for Differentiating Between Vaccinal Titers and Infection Titers of Brucella Abortus," by Dick, Venzke, and York (J.A.V.M.A., *111*, Oct., 1947: 255-258) has been highly complimented by the livestock press as an approach to one of the major problems hampering the cattle breeders.

Oklahoma

Annual Meeting.—The thirty-third annual meeting of the Oklahoma Veterinary Medical Association was held on Jan. 22-23, 1948, at the Skirvin Tower Hotel in Oklahoma City. The Honorable Allen Street, mayor, gave the address of welcome and Dr. C. H. McElroy, Stillwater, responded. The following program was presented:

Dr. G. T. Easley, Sulphur: "Discussion of Bovine Sterility."

Dr. C. P. Zepp, New York City: "Diseases of the Ear, their Treatment, Including Surgery," and "Obscure Cases and Their Treatment" (with slide demonstrations).

Dr. G. R. Moore, professor, Department of Surgery and Medicine, Manhattan, Kan.; "Acetonemia, Grass Tetany, and Kindred Diseases."

Dr. W. E. Irwin, Farm Department, Phillips Petroleum Co., Bartlesville, Okla.; "Other Side of the Fence" (colored sound moving picture illustrating effects of mineral deficiency of livestock and man).

Dr. E. R. Frank, professor, Department of Surgery and Medicine, Manhattan, Kan.; "Equine Surgery," and "Bovine Surgery" (picture demonstrations).

Dr. M. R. Clarkson, in charge Inspection and Quarantine Division, BAI, Washington, D. C.: "Discussion of Foot-and-Mouth Disease."

Dr. J. F. Knappenberger, Hutchinson, Kan.: "Low Virulent Infection of Cattle."

Dr. A. K. Kuttler, in charge, Tuberculosis Eradication Division, BAI, Washington, D. C "Recent Developments for More Uniform Pro-

cedures in Brucellosis and Tuberculosis Eradication."

Dr. D. H. Ricks, state veterinarian: "Present Status of the Brucellosis Program."

Members were entertained at a banquet in the Rose Room of the Skirvin Hotel.

Ontario

"Mysterious" Disease of Mink.—An unidentified disease, believed to be spread by rats and flies from a city dump, has killed large numbers of mink in the area of Fort William, Ont. According to the *American Fur Breeder* (Dec., 1947), it is feared that ranchers will go bankrupt if steps are not taken to enforce sanitary practices at the city dump.

Pennsylvania

District Association.—The Bucks Montgomery Veterinary Medical Association met Jan. 14, 1948, in Doylestown. Guest speaker was Dr. R. C. Snyder, secretary of Pennsylvania State Veterinary Medical Association, who also showed motion pictures. Subjects discussed were: "Clinical Cases of Rabies in Dogs," "X-Disease in Cattle," "Public Relations" (illustrated), and others.

Officers elected at this meeting were: Dr. Henry Stover, Langhorne, *president;* Dr. Joseph Shute, Doylestown, *secretary-treasurer;* and Dr. Vincent Ruth, Lansdale, board of trustee member to the state association.

s/J. G. SHUTE, *Secretary.*

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Northwestern Association.—The Northwestern Pennsylvania Veterinary Medical Association, at their meeting in Titusville on January 13, elected Dr. John E. Stefanick, *president;* Dr. Stanton Bower, Corry, *Secretary;* and Dr. William C. Savage, Titusville, to the board of trustees of the state association.

s/RAYMOND C. SNYDER, *Secretary.*

Quebec

America's French Veterinary College.—Says the *Canadian Journal of Comparative Medicine and Veterinary Science:* "Le 28 Octobre 1947 restera une date memorable dans l'histoire de la Médecine vétérinaire du Quebec," meaning that last October 28 is a day to be remembered in writing the veterinary history of Quebec, the only part of the Western Hemisphere where the language of the first settlers still persists. The occasion (*loc. cit.*) was the ceremonies attending the opening of the provincial school of veterinary medicine at St. Hyacinthe, which was authorized by the Legislative Assembly in 1947 (*see* the JOURNAL, June, 1947, p. 411), and which the reporter calls "la seule école vétérinaire francaise d'Amérique" (the only French veterinary school in America). Pending the construction of a permanent installation, the school will occupy the barracks used to train Canadian sailors during the war.—[This provincial school replaces the one previously connected with the University of Montreal and operated for many years by the trappist monks at La Trappe, Quebec. The name of the new school is L'École Médicine Vétérinaire de la Province de Québec and the dean is Dr. Gustave Labelle.—Ed.]

Utah

Intermountain Association.—At the Intermountain Veterinary Medical Association in Salt Lake City, Jan. 19, 1948, the following officers were elected: Drs. Wayne Binns, Logan, *president;* A. P. Schneider, Boise, *president-elect* for 1949; J. W. Chambers, Garland, *first vice-president;* Rue Jensen, Ft. Collins, Colo., *second vice-president;* and M. L. Miner, Logan, *secretary-treasurer.*

s/M. L. MINER, *Secretary.*

FOREIGN

Egypt

Goat-Virus (Rinderpest) Vaccine Condemned.—At the Franco-British Conference on Rinderpest in May, 1946, it was universally agreed that goat-virus vaccine "requires further experimentation *vis-a-vis* the irregularity of the results obtained," and that this view had been proved again in the outbreak of April, 1945—the first in Egypt for twenty years. At that time, Dr. James Edwards was brought to the Institute of Serotherapy of Abbassich at the government's expense to experiment with its control. Edward's experiments failed from the start because the viruses used were strains of goat virus derived from India, Kenya, and Nigeria, which, instead of controlling the outbreak, started a number of new centers of rinderpest. While the goat-virus vaccine employed might have been applicable to Indian goats and sheep and to cattle highly susceptible to rinderpest infection, it was found without value for vaccinating the European type of cattle. Its complete failure in Egypt condemned it for Egyptian herds.—*Rachard Armed Mohamed: Revue d'Elevage et de Médecine Vétérinaire des Pays tropicaux, I (Jan.-March, 1947): 83-85.*

Germany

Popular Science Magazine for Germany.—A small group of German science writers have started the publication of *Orion*, a monthly, popular science magazine. It is published near Munich.

According to the editors, quoted by Science Service, the objectives of the new publication are twofold: first, to lay a foundation of knowledge, especially for young people who, under Hitler, "learned less and less year by year and now show terrible gaps in their education;" and secondly, to give readers "material they need to create for themsleves a correct picture of a world in which many new things are developing."

Editor-in-chief is Erich Lasswitz, who was science editor of the progressive newspaper,

Frankfurter Zeitung, for twenty-five years—until Goebbels had him dismissed.

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Tuberculosis Rate.—If tuberculosis is taken as a criterion, the Hitler régime was not all bad. At the end of World War I, the mortality of the German people from tuberculosis was 32.3 per 10,000 per annum. By 1938, the rate had been brought down to 8.2. What Germany brought upon itself in the last ten years remains to be calculated. The annual tuberculous mortality based on sketchy reports is about 200,000 for the total population. The increase is due to the influx of expellees from Poland and other countries, bad housing, lack of food, and unsettled living.—*J. Am. M. A. (Foreign Letters), Jan. 17, 1948.*

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The Lubeck Tragedy.—In the fight against the mounting incidence of tuberculosis, Danish physicians have come to Germany to assist in large scale BCG (Bacillus Calmette Guérin) vaccination. The incident recalled what is known in the medical profession as "The Lubeck Tragedy." In 1930, 87 out of 250 children inoculated with BCG died and only 76 of those who lived remained well. Investigation revealed that the vaccine used was not BCG but virulent cultures of Koch's bacillus. Some have charged that the "mistake" was a deliberate attempt to incite hatred for France where BCG was discovered, or at least an attempt to cast discredit on French science. Although, the culprits were punished by the courts, and BCG acquitted, German phthisiologists continued to condemn its use until the present flare-up of all types of tuberculosis.

Italy

Artificial Insemination Congress.—The international congress on animal production and pathology, and artificial insemination to be held at Milan on June 23-30, 1948, is sponsored by the *Instituto Sperimentale Italiano Lazzaro Spallanzani for Artificial Insemination* and supported by UNESCO and FAO. Committees in 15 nations have been formed to participate. Albert Tyler is the delegate announced to represent the U.S.A. The biologic, pathologic, zoötechnical, and practical problems involved will be discussed. For information write Secretary J. Bonadonna, *via* Bronzetti, Milan. Veterinary practitioners are invited. *From a UNESCO Release.*

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Q Fever.—In the Naples-Caserta area (Italy) between February and April, 1945, there were 511 cases of a disease thought to be primary, atypical pneumonia. Later investigation showed that this apparently was an epidemic of Q fever, caused by an Italian strain of *Rickettsia burneti*. Many New Zealand soldiers stationed there were affected. The authors recalled that similar outbreaks occurred among German troops in Greece during 1944 and among British and American troops in the Mediterranean theater—all outbreaks later being identified as Q fever.

Ticks and fleas were not incriminated. Although various species of insects were present, it seemed likely that the cases were induced by inhalation infection. A large number of cases occurred where soldiers were occupying farm quarters or were living in close proximity to cattle, rats, and pigeons.—[*Brit. Med. J. (Nov. 1, 1947): 684-685.*]

Nigeria

Veterinary School Established.—The importance of developing animal production was emphasized by the founding of a veterinary school and council in Equatorial French Africa. Buildings and installations were completed in 1944. Considerable trouble was met in obtaining a full staff of competent professors. The prospectus announcing the terms of admission and qualification for practice limits the number of students admitted to five per year.

Russia

Trotting Horses.—An interesting communication comes from behind the "Iron Curtain" (in Germany) signed "Soldier of Fortune," who gives his birthplace as Buchanan County, Iowa. He points out that breeding and racing of trotting horses has long been a major industry in Russia and that there are fine trotting tracks at Leningrad, Moscow, Odessa, Cracow, and other big cities. The Orlov trotters, descendants of stallions imported from the United States, are still raised in large numbers, especially in the northern part of the country. The Ukraine and Caucasus favor Thoroughbreds.

But what puzzled our reporter was the consternation about the $42,000 paid by a Californian for White Hanover at the last year's sale at Harrisburg. "Have you forgotten that 3-year-old, Altell, brought C. W. Williams $105,000 in 1889 and Arion sold by Governor Stanford two years later for $125,000, when folding money didn't come in bales?" the latter asks.

VETERINARY MILITARY SERVICE

Veterinary Corps Officers separated from Military Service

Alabama
Davis, James J.

Arkansas
Corley, Glenn P.

California
Crane, Charles S.

Colorado
Brown, William W.
Starkebaum, C. C.

Connecticut
Greer, Russell F.

Georgia
Derrick, Jesse D.

Illinois
Gooch, John M.
Sedlacek, Glen E.

Iowa
Griswold, David M.
Kleveland, R. C.
McCracken, D. D.
Wehler, Duane R.

Kansas
Dehner, Lorid A.
Keith, Richard M.

Louisiana
Rodriguez, E. F., Jr.

Michigan
Godisak, John J.
Grossman, Samuel M.
Zingeser, E. R.

Missouri
Mahnken, Keith W.
Morley, William J.

Nebraska
Emery, Rex W.
Hittle, Harold E.
Nisley, Bryant B.

New Jersey
Ellmers, George A.

New York
Holden, Chester J.
McEntee, Kenneth
Sayres, Joseph P.

North Dakota
Clark, Delbert D.

Ohio
Duncan, Charles S.
Hall, R. L., Jr.
Walker, James M.
McKenzie, Carl V.

Oklahoma
Cochran, Albert B.

Pennsylvania
Espy, George E.
Krechmer, Morton B.
Slider, Howard B.

Texas
Banks, William C.
Kelly, R. J., Jr.

Wisconsin
Petersen, Floyd N.

Wyoming
Sheppard, Asa N.

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Veterinary ROTC.—The restriction contained in each annual Military Appropriation Act since 1933 relative to maintaining and establishing veterinary ROTC units, has not been included in the 1949 Act. The restrictive clause provided that none of the funds appropriated in this Act shall be available for any expense on account of any student not a member of such units on May 5, 1932. This, in effect, prevented further enrollments, and the existing veterinary ROTC units ceased to function after June 30, 1934.

Since 1946, the Surgeon General has been endeavoring to get the restrictive clause excluded from the Military Appropriation Act. The first hurdle has been cleared. The number of veterinary units to be authorized by the Department of the Army will depend, in part, on the funds available for the entire ROTC program in the Military Appropriation Act for 1949 as passed by Congress. This information may not be available until May, 1948.

As it is desired to activate the veterinary ROTC units which may be established, on July 1, 1948, and start operation of these units with the commencement of the school year in 1948, preliminary studies and plans have been made in the Surgeon General's office. Therefore, the chief of the Veterinary Division is making arrangements to visit the dean of each veterinary school in the near future and explain the medical department ROTC program, and also make preliminary arrangements for the establishment of veterinary ROTC units in those institutions willing and ready to commence the program this year.

Approximately one year ago, all universities or colleges having schools of veterinary medicine, meeting acceptable standards, were circularized regarding their interest in, and willingness to establish, veterinary ROTC units. It is significant that all ten schools contacted submitted applications for a veterinary ROTC unit. The current Medical Department Reserve Officers Training Corps program has features which should prove attractive and beneficial not only to the veterinary student but to the dean and the other faculty members. It must be reiterated, however, that the number of units activated will depend on the funds available.

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Returned to Active Duty

The following Veterinary Corps Reserve officers have responded to the Army's appeal for additional veterinary officers and applied for, and have been returned to, active duty. They are assigned to stations as indicated:

Capt. Omar G. Werntz, 5035th ASU Chicago, w/sta at Des Moines, Iowa.

Major Wilson M. Osteen, Pomona QM Depot, Pomona, Calif.

Major Clifford W. Turner, 6003d ASU, Fort Ord, Calif.

Capt. Emmanuel F. Coyle, 1101st ASU Boston, w/sta at Worcester, Mass.

Capt. Harold D. Valentine, Bergstrom Field, Austin, Texas.

Capt. Dwain T. Bowie, Chicago QM Depot, Chicago, Ill.

Lt. Col. Merrill L. Steele, 4005th ASU, Camp Hood, Texas.

Major Elwin R. Prather, 5022nd ASU, Camp Carson, Colo.

Major Victor J. Cook, 2505 AFBU, Scott Field, Belleville, Ill.

COMING MEETINGS

Tennessee Veterinary Medical Association. Annual meeting. Hotel Andrew Johnson, Knoxville, Tenn., April 5-6, 1948. H. W. Nance, Lawrenceburg, Tenn., secretary-treasurer.

American Animal Hospital Association. Hotel Atlanta Biltmore, Atlanta, Ga., April 20-22, 1948. R. E. Ruggles, P.O. Box 303, Moline, Ill., secretary.

North Central Iowa Veterinary Medical Association. Spring meeting at the Wahkonsa Hotel in Fort Dodge on April 22, 1948. B. J. Gray, Fort Dodge, Iowa, secretary-treasurer.

American Dairy Science Association. University of Georgia, Athens, Ga., June 14-16, 1948. R. B. Stoltz, Ohio State University, Columbus 10, Ohio, secretary.

North Dakota Veterinary Medical Association. Hotel Clarence Parker, Minot, N. Dak., June 14-15, 1948. F. M. Bolin, North Dakota Agricultural College, College Station, Fargo, N. Dak., secretary.

Kansas and Missouri State Veterinary Medical Associations. Joint meeting in Kansas City, June 29-July 1, 1948. C. W. Brown, Topeka, Kan., and J. L. Wells, Kansas City, Mo., secretaries.

Midwest Veterinary Conference, sponsored by Kansas and Missouri State Medical Associations, Municipal Auditorium, Kansas City, June 29-July 1, 1948. Dr. G. L. Dunlap, 800 Woodsweather Road, Kansas City, Mo., chairman.

North Carolina State Veterinary Medical Association, Annual Meeting. State College, Raleigh, N. C. June 29-30, 1948. Dr. J. H. Brown Tarboro, N. C., secretary-treasurer.

Kentucky Veterinary Medical Association. Louisville, Ky., July 14-15, 1948. T. P. Strittmatter, Jr., 1034 Monmouth St., Newport, Ky., secretary-treasurer.

American Veterinary Medical Association. Palace Hotel, San Francisco, Calif., Aug. 16-19, 1948. J. G. Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

American Association for the Advancement of Science. Centennial Meeting, Washington, D. C., Sept. 13-17, 1948. J. M. Hutzel, 1515 Massachusetts Ave., N.W., Washington 5, D. C., assistant administrative secretary.

Fourth International Congresses on Tropical Medicine and Malaria. Washington, D. C., May 10-18, 1948. Dr. Wilbur A. Sawyer, Department of State, Washington 25, D. C., executive secretary, Organizing Committee.

Chicago Veterinary Medical Association. Palmer House, Chicago, Ill., the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

Houston Veterinary Medical Association, Houston, Tex., the first Thursday of each month. Edward Lepon, Houston, Tex., secretary-treasurer.

Keystone Veterinary Medical Association. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., the fourth Wednesday of each month. Raymond C. Snyder, N. W. Cor. Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

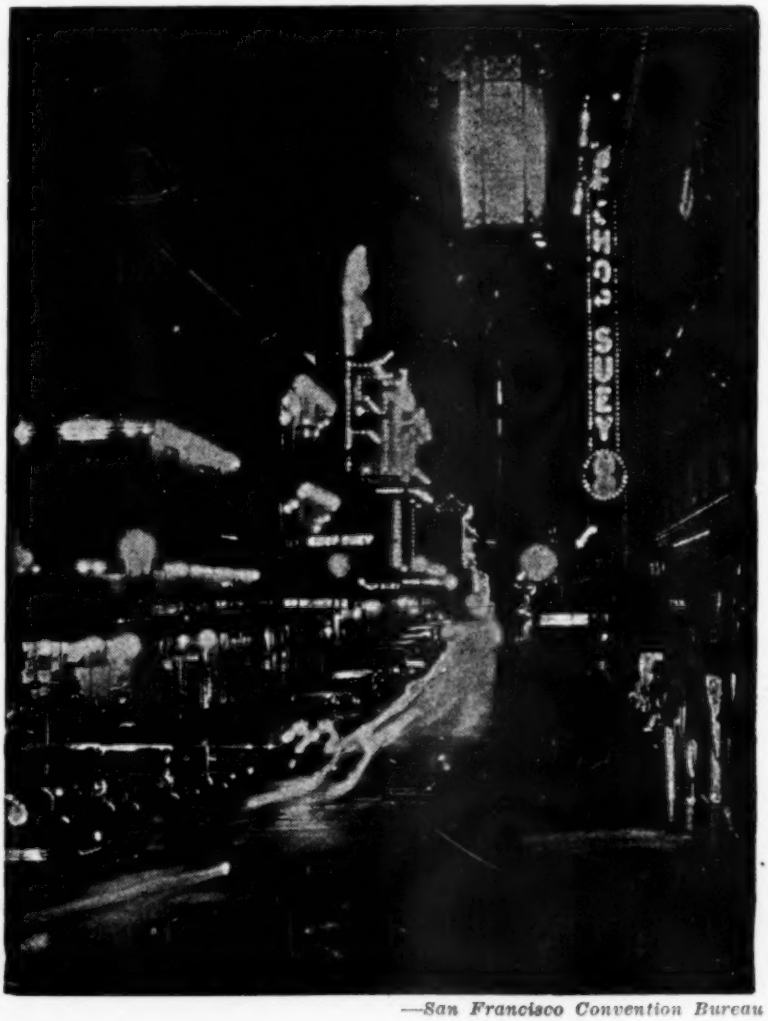
Massachusetts Veterinary Association. Hotel Statler, Boston, Mass., the fourth Wednesday of each month. C. L. Blakely, Angell Memorial Animal Hospital, 180 Longwood Ave., Boston, Mass., secretary-treasurer.

New York City Veterinary Medical Association. Hotel Pennsylvania, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Saint Louis District Meetings. Roosevelt Hotel, St. Louis, Mo., the first Friday of February, April, June and November, W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

"The Golden Gate in '48"

Chinatown Street Scene at Night in San Francisco



While attending the 85th AVMA convention, you will have ample opportunity to visit San Francisco's talked-about attractions, including Chinatown (shown here), Fisherman's Wharf, the Golden Gate bridge, and the "Top of the Mark." For other recreation, a chain of regional parks in the foothills along the eastern shore of the bay provide golf, swimming, and boating.

—San Francisco Convention Bureau

MARRIAGES

Dr. Robert A. Vanderhoof (UP '45), Woodlake, Calif., to Miss Margaret E. Mills, Dec. 19, 1947.

Dr. Alfred R. Riegg (KSC '45), Waynesville, N. C., to Miss Betty Sue Elliott, Dec. 9, 1947.

Dr. W. J. Winchester (KSC '46), Glendale, Calif., to Miss Betty Button, Sept. 27, 1947.

Major Martin Kadets (KSC '41), Hollywood, Calif., to Miss Vicki Perrault, Oct. 16, 1947.

BIRTHS

Dr. (ISC '43) and Mrs. Roy E. Reppert, Cambridge, Ill., announce the birth of a son.

Dr. (COLO '44) and Mrs. Paul Weinmeister, Aledo, Ill., announce the birth of a daughter.

Dr. (KSC '41) and Mrs. Maurice W. Hull, Clay Center, Kan., announce the birth of a son, Daniel Bruce, on Dec. 5, 1947.

Dr. (KSC '44) and Mrs. N. C. Gustafson, Lindsborg, Kan., announce the arrival of Stephen Claypool on July 16, 1947.

Dr. (KSC '39) and Mrs. W. H. Dieterich, San Francisco, Calif., announce the birth of a son, Christopher Hyde, on Nov. 3, 1947.

Dr. (KSC '34) and Mrs. H. T. Mydland, Horton, Kan., became the parents of a daughter, Karen Kay, Dec. 22, 1947.

Dr. (KSC '41) and Mrs. C. C. Smith, Dos Palos, Calif., announce the birth of a daughter, Georgeanna, Dec. 9, 1947.

Dr. (KSC '43) and Mrs. F. H. Brown, Neola, Iowa, on Dec. 24, 1947, became the parents of a daughter, Gretchen Anne.

Dr. (KSC '41) and Mrs. L. N. Atkinson, Waterville, Kan., announce the birth of a son, Samuel Leroy, March 24, 1947.

Dr. (KSC '42) and Mrs. F. O. Steele, Stillwater, Okla., became the parents of a son, Terry Stevens, on Oct. 4, 1947.

Dr. (KSC '42) and Mrs. W. W. Wempe, Lawrence, Kan., announce the arrival of Patricia Ann on Nov. 24, 1947.

Dr. (KSC '44) and Mrs. Roy M. Grandfield, Manhattan, Kan., announce the arrival of Larry Miles on April 14, 1947.

Dr. (KSC '44) and Mrs. Robert F. Gentry, East Lansing, Mich., announce the birth of a son, Steven Douglas, Oct. 31, 1947.

Dr. (KSC '47) and Mrs. Jack G. Ballentine, Bonner Springs, Kan., became the parents of a daughter, Gayle Ann, on Nov. 25, 1947.

Dr. (KSC '47) and Mrs. Fred A. York, Lenox, Iowa, announce the birth of Lari Suzanne, Nov. 17, 1947.

Dr. (KSC '47) and Mrs. C. K. Jewell, Belmar, N. J., announce the birth of a son on Oct. 21, 1947.

To Dr. (COLO '46) and Mrs. George W. Moreland, Levelland, Texas, a son, George Robert, Dec. 25, 1947.

To Dr. (API '43) and Mrs. R. F. Connor, Jasper, Ala., a son, Robert Elsworth, on Aug. 26, 1947.

To Dr. (TEX '43) and Mrs. Robert E. Fahr, Paragould, Ark., a daughter, Gwen Elizabeth, on Nov. 10, 1947.

To Dr. (API '45) and Mrs. Don R. Goodwin, Eldorado, Ark., a daughter, Suzanne, on Jan. 14, 1948.

DEATHS

★**C. E. Hayden** (CORN '14), 66, Ithaca, New York, professor of veterinary physiology at Cornell, died Jan. 25, 1948. He received his D.V.M. from Cornell University in 1914, and became assistant profesor of veterinary physiology the same year. He had been a full professor since 1929. He was secretary-treasurer of the New York State Veterinary Medical Association for fourteen years and treasurer for seven. He was a member of the Southern Tier Veterinary Medical Association, a fellow of the American Association for the Advancement of Science, and a member of the Society for Experimental Biology and Medicine. He was business manager of the *Cornell Veterinarian*, and contributed numerous articles to technical journals. Dr. Hayden was internationally known for his research work in the metabolic disorders of animals. He had been a member of the AVMA since 1915.

★**James S. Healy** (KVC '09), 70, Madison, Wis., died on Jan. 17, 1948. He had been, for thirty-nine years, inspector in charge of the Madison office of the U. S. BAI, and had retired on Nov. 30, 1947, because of poor health. He became a member of the AVMA in 1917.

W. A. Shearer (Ont), 62, Winnipeg, Manitoba, Can., died in January 1948. He was born in Norwich, England, and came to Canada in 1901. He graduated from Ontario Veterinary College and practiced in Ogema, Sask. Dr. Shearer was promoted to the rank of major in World War I.

S. T. Button, Conway, Ark., died Jan. 5, 1948. He had practiced veterinary medicine in Conway for twenty years and had formerly been a member of the Monticello A. & M. College faculty.

John H. Seale (MC G), 77, Salem Mass., died Dec. 2, 1947.

Edward F. Manning, 95, Everett, Mass., died on Dec. 8, 1947.

Solomon Sporn, 25, Roslindale, Mass., died in December, 1947.

★Indicates member of the AVMA.

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An' Related Topics



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"Your Stake in World Affairs."—This is the title of an article in *Successful Farming* by Prof. O. B. Jesness, chief, Division of Agricultural Economics, University of Minnesota, which ought to be read, studied, and acted upon by everyone interested in the welfare of the U. S. A. In effect, leadership of 2,150,000,000 people has been forced upon our 140,000,000 not on account of ethnic superiority but largely because of having had a prodigious mine of natural resources to develop. Make no mistake about the part played by these resources in charting our way of life. "Can we go on living in the dreamworld of bygone days?" is the $64 question now.

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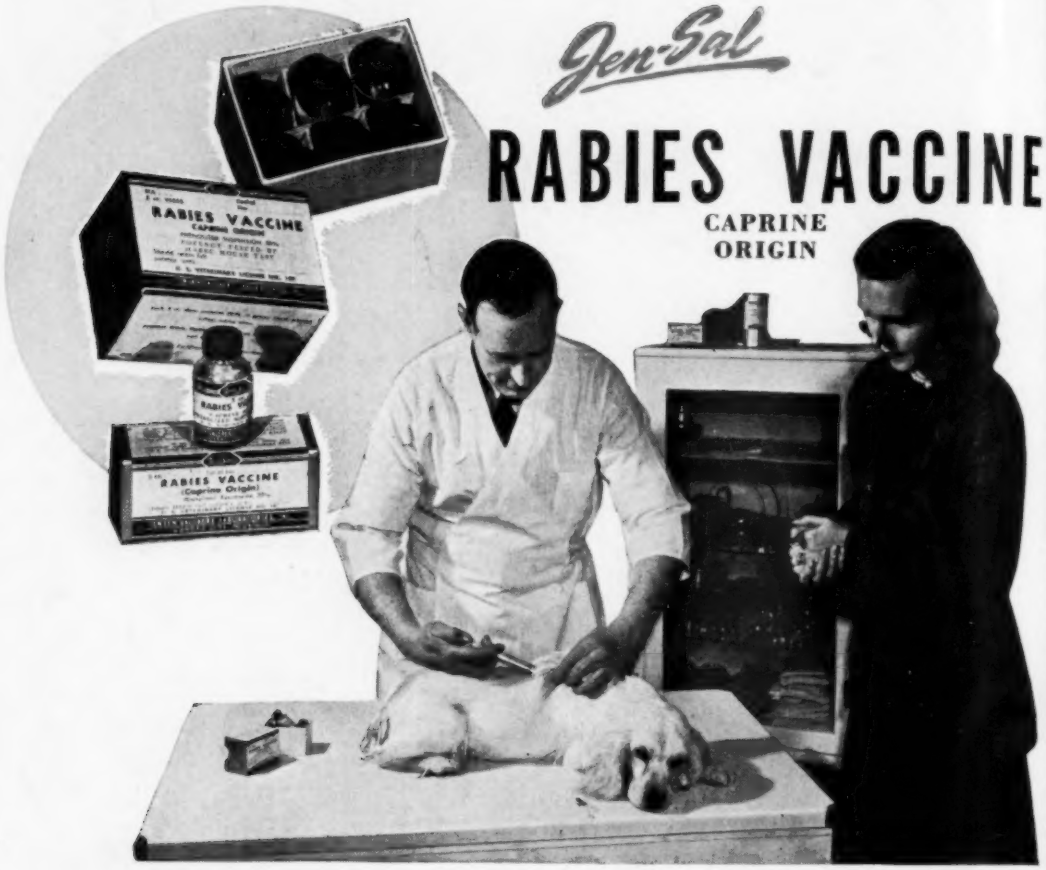
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